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INTRODUCTION.

This REVIEW is based on reports for December, 1891, from 2,455 regular and voluntary observers. These reports are classified as follows: 159 reports from Weather Bureau stations; 118 reports from United States Army post surgeons; 1,581 monthly reports from state weather service and voluntary observers; 32 reports from Canadian stations; 158 reports through the Central Pacific Railway Company; 407 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from local weather services established in all states and territories, except Idaho, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR DECEMBER, 1891.

The month was warmer than usual in districts east of the Rocky Mountains, and from eastern Pennsylvania and eastern New York over New England the mean temperature was the highest ever noted for December. Over the plateau region and along the Pacific coast the mean temperature was below the normal, and at stations in the middle and southern plateau regions and on the middle and south Pacific coasts the month was the coldest December on record. The principal cold wave of the month appeared on the north Pacific coast on the 24th, and reached the Atlantic coast the night of the 26th. The temperature fell below freezing on the Pacific slope, except at points along the immediate coast, and was below —20° in the Red River of the North Valley. The line of zero temperature extended from central New Mexico to Upper Michigan, and the line of freezing weather reached the Gulf coast and northern Florida. The minimum temperatures attending this cold wave were the lowest ever recorded for December over the southwestern districts, and tender vegetation, oranges, and nursery stock were injured in southern California and Arizona.

PRECIPITATION.

The monthly precipitation was in excess of the December average from the north Pacific coast to the west Gulf states, from the southeast slope of the Rocky Mountains to the Lake Superior region, and from Mississippi northeastward over New York and southern New England, the greatest excess being noted on the north Pacific coast, where it was 4.00 to 6.00 inches. Over the north-central districts, west of the Lake region, in extreme southwest, southeast, and northeast parts of the country, and from the middle Mississippi valley to eastern Ontario the monthly precipitation was deficient, the most marked deficiency appearing on the south Atlantic and south Pacific coasts, where it was more than 2.00 inches. At points in northwest Washington, west Oregon, north Kansas, north Iowa, southeast Minnesota, and central Pennsylvania the monthly precipitation was the greatest on record for December, and at Fort Assinaboine, Mont., the amount, 0.08 inch., corresponded with the least December precipitation, noted in 1881. More than 100 inches of snow fell at stations on the line of the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains, and the monthly snowfall was slightly less than that amount in the mountains of Colorado. Over the eastern part of the country the snowfall was very deficient, and in New England and the middle Atlantic states the amount was insufficient to afford protection to grass and grain.

STORMS.

The storms of the north Atlantic Ocean were generally of slight intensity over the western part of the ocean, but developed great energy after leaving American waters. The most destructive of these storms visited the British Isles between the 6th and 12th, causing loss of life and much damage to property and shipping. A remarkable succession of cyclonic areas from the north Pacific Ocean caused unusually stormy weather on the north Pacific coast, and during the latter part of the month the storms which visited that region were notably persistent and severe. On the 3d destructive storms occurred from the north-central districts to the Gulf States, and on the 4th stormy weather was general from the Mississippi Valley to the Atlantic coast. The latter part of the month was marked by storms of considerable energy in all districts, save along the middle and south Pacific coasts.

INLAND NAVIGATION.

Navigation closed at a number of ports on the Great Lakes and on the Erie Canal, and the rivers in the northern tier of states were generally frozen.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for December, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars.

In December the pressure is usually highest over the middle plateau region and in an area covering eastern Tennessee and adjoining parts of the Carolinas and Georgia, where it is above 30.20, and is lowest over the Gulf of Saint Lawrence,

where it is below 29.95. From the extreme northeastern and northwestern parts of the country the barometric gradient is marked to the Iceland and Bering Sea areas of low pressure, where the normal values are below 29.50 and 29.60, respectively. The pressure increases over the United States, except from the middle plateau region to the north Pacific coast, the most marked increase being shown in the Red River of the North Valley, where it exceeds .05. A marked increase of pressure occurs over the west part of the north Atlantic Ocean between the West Indies and Bermuda, while from the 35th parallel to Iceland and southern Greenland the pressure is generally lower than in November, the decrease in the Iceland low area being more than .20.

In December, 1891, the mean pressure was highest in the south Atlantic coast states and thence over eastern Tennessee and northeastern Alabama, where it was above 30.25, the highest mean reading, 30.31, being noted at Augusta, Ga. In districts south of the Ohio River and east of the Mississippi River, and in an area extending from the Pacific coast between the 35th and 40th parallels over Nevada, Utah, and western Colorado, the mean pressure was above 30.20. The lowest mean pressure was noted from the Pacific coast north of the 48th parallel over the British Northwest Territory, where it was below 29.85, and the mean values were below 29.90 along the northern border of the country from the Lake Superior region westward.

As shown by Chart IV, the ridge of high pressure over the southern part of the country from the Atlantic to the Pacific oceans, which appears on Chart II, marks the path of the high pressure areas of the month, the high area of the middle plateau region and the Pacific coast indicating the point of entrance and region of slow movement over the western part of the continent, and the high area of the south Atlantic states showing where the high areas from the west united with the western extremity of the Atlantic Ocean high area and drifted slowly eastward. Chart I shows that the region of exceptionally low pressure from the north Pacific coast over the British Northwest Territory embraces the tracks of an unusual number of storms of great intensity which advanced from the Pacific Ocean.

A comparison of the pressure chart for December, 1891, with that of the preceding month shows an increase of pressure over the southeastern and southwestern parts of the country, and a marked decrease over the northern and central sections. The greatest increase of mean pressure occurred at stations in the south Atlantic states, on the middle and south Pacific coasts, and over Arizona, where it was .10 or more, and the most marked decrease was noted along the northern border of the country and in the north-central valleys, where it exceeded .15. The plateau region area of high pressure occupied a more southern position than for November, 1891, and an increase of about .05 occurred within its limits, and the south Atlantic coast high area extended westward, with an increase of .05 to .10. In each of the months referred to the pressure was lowest along the northern border of the country, the mean values being .05 to .10 lower in December.

The mean pressure was above the normal in the Atlantic coast states, and from the lower lake region to the Gulf coast; it was also above the normal on the middle and south Pacific coasts and over the western parts of the middle and southern plateau regions. The pressure was below the normal from the Mississippi and Ohio valleys and the lower lake region westward to the Rocky Mountains, over the northern plateau region, and on the Pacific coast north of the 43d parallel. The greatest departure above the normal occurred on the Atlantic coast between the 32d and 39th parallels and on the middle California coast, where it exceeded .10, and the most marked departure below the normal was noted in the Red River of the North Valley, and from north-central Montana over Alberta, where it was more than .25.

HIGH AND LOW AREAS.

The paths of areas of high and low pressure over the United States and Canada during December, 1891, are shown on Charts IV and I, respectively, and some of the more notable features of the areas are given in the table at the end of this chapter.

HIGH AREAS.

Twelve high areas appeared, the average number traced for December during the last 17 years being 8. Of the high areas traced for the current month one was a continuation of high area VIII for November, 1891; one advanced northeastward from the Gulf of Mexico; one moved eastward from the middle plateau region; four appeared in the British Possessions; and five were first located off the Pacific coast between the 35th and 45th parallels. Two of the Pacific areas traversed the continent, the average velocity being 36 miles per hour, and one, number XI, was central over northern New York at the close of the month. The course of the high areas was east-southeast to southeast to the Gulf and Atlantic coast states, and thence northeastward to Nova Scotia, where the tracks appeared to recurve to the eastward, and the average rate of advance, 28 miles per hour, was about the same as the average velocity of high areas for December. The following is a description of the high areas traced:

I.—November closed with an area of high pressure central over western Virginia and temperature below freezing in the east Gulf states and along the Atlantic coast north of Florida. The morning of December 1st this high area was central near Augusta, Ga., with pressure 30.60; the temperature was below freezing to the east Gulf coast and northern Florida, and heavy frost was reported in the north part of the Florida Peninsula. By the 2d the center had passed off the Carolina coast. Moving slowly north-northeast the high area was central off the New England coast the evening of the 3d, whence it recurved eastward over Nova Scotia by the morning of the 4th.

II.—The presence of this high area off the north California coast was indicated by evening reports of the 1st, and at 8 p. m. of the 2d it was apparently central over extreme southwest Oregon, with pressure above 30.30, and temperature below freezing over the west part of the middle plateau region. During the 3d the center moved southeastward over Nevada and Utah, with an appreciable decrease of pressure, temperature below freezing over New Mexico and east Arizona, and snow from western Nevada to north New Mexico. During the 4th the center moved eastward along the Gulf coast, the line of freezing weather extended south of El Paso, Tex., and snow fell in the east part of the middle plateau region. On the 5th the center remained nearly stationary over South Carolina, where a slight increase of pressure was shown, and by the morning of the 6th it had disappeared off the Carolina coast.

III.—The presence of this high area off the middle Pacific coast was shown by evening reports of the 4th. By the morning of the 5th the pressure had risen above 30.30 over northern California and western Oregon, and the evening of that date a reading of 30.50 was noted at Roseburgh, Oregon. During the 6th the high area occupied the west part of the middle plateau region, the pressure rose above 30.80 at Winnemucca, Nev., the temperature was below freezing over the east part of the southern plateau region and on the southeast slope of the Rocky Mountains, and there was an abnormal fall in temperature of more than 20° in 12 hours from southern Missouri to northern and eastern Texas. During the 7th this area remained nearly stationary over Utah and western Colorado, with pressure above 30.80 in the morning; the temperature continued below freezing over New Mexico and in the north part of the west Gulf states; there was a decided fall in temperature east of the Mississippi River and south of the Lake region, the abnormal fall in 12 hours exceeding 20° in the Atlantic coast states from northern Virginia to Florida; and the lowest temperature of the month was noted at Los Angeles, Cal., Santa Fé, N. Mex., and Abilene and Galveston, Tex. By the morning of the 8th the center had shifted position to the west Gulf and the evening of that date was central near

Augusta, Ga., with pressure above 30.60, and during the 9th it passed eastward off the coast.

During the presence of this high area over the middle plateau region an increase of pressure of about .30 was shown; during the 6th and 7th its advance movement was slow, about 14 miles per hour; and one of the most important cold waves of the month extended over the southwest and southern districts from the 5th to 8th, carrying the line of freezing weather almost to the immediate Gulf coast by the morning of the 8th, and causing heavy frost in northern Florida.

IV.—The presence of this high area off the middle Pacific coast was shown by evening reports of the 9th. The morning of the 10th the pressure rose above 30.50 over western Oregon, and the evening of that date the center was over northeastern Oregon, with pressure above 30.70. The temperature fell 10° to 20° in 12 hours over the middle and east parts of the plateau region, and freezing weather extended southward over the east part of the plateau region into Mexico. From the 11th to 15th, inclusive, this high area remained nearly stationary over the middle plateau region. A gradual decrease of pressure occurred, followed on the 14th by an increase. During the 16th the area moved southeastward, and by the morning of the 17th had apparently merged into high area VII which extended from the Lake Superior region southwestward.

V.—Was apparently an offshoot of high area IV, and on the 11th was central over Nebraska, with pressure above 30.70. During the 12th the center moved east-southeast over the Ohio Valley, with a slight decrease of pressure and an abnormal temperature fall of 5° to 10° in 12 hours from the lower Missouri valley to the middle Atlantic coast. During the 13th the area settled southward over the south Atlantic states, with a marked decrease of pressure, and the temperature fell below freezing from the upper Ohio valley over western Virginia. By the morning of the 14th the center had passed off the south Atlantic coast.

VI.—Appeared north of the Lake region the morning of the 14th, with pressure above 30.30 and an abnormal temperature fall of 5° to 17° in 12 hours from the lower lakes over the Saint Lawrence Valley and the Canadian Maritime Provinces. Moving southeastward, with a slight increase of pressure, the center passed off the New England coast during the 15th.

VII.—Appeared in the Saskatchewan Valley the evening of the 15th, with pressure above 30.40, and a temperature fall of 10° to 20° in 12 hours from Manitoba to the middle Mississippi and lower Ohio valleys. During the 16th the center advanced to Minnesota and a marked fall in temperature occurred to the Atlantic coast. The 12-hour change was more than 20° in New England, and at points in the lower lake region the 24-hour change exceeded 30°. The temperature fell below zero in the Red River of the North Valley and northern Ontario, and the line of freezing weather extended over the north part of the Ohio Valley. During the 17th the area was central over the upper lake region, with pressure above 30.50; the temperature fall was 5° to 15° in 12 hours, and 20° to 30° in 24 hours at points along the Atlantic coast north of the Carolinas; the line of freezing weather extended southward to the Ohio River and Virginia; and the lowest temperature of the month was noted from the east part of the Lake region over middle and northern New England. Passing southeastward the center reached northern Virginia the evening of the 18th; the pressure rose above 30.60; the 24-hour temperature fall was more than 10° in the Atlantic coast states between the 32d and 40th parallels; the line of freezing weather extended to South Carolina, Tennessee, and Arkansas; and the lowest temperature of the month occurred from the middle Ohio valley eastward to the Atlantic coast between the 38th and 41st parallels. During the 19th the center passed to southeastern New York, with a decrease of pressure, and generally higher temperature over the eastern part of the country, save in the Saint Lawrence Valley. During the 20th it moved northeastward over New England, and thence eastward over Nova Scotia, with a slight increase of central pressure by 8 p. m.

VIII.—The presence of this high area off the middle Pacific coast was indicated by reports of the 20th and 21st; by the morning of the 22d the center had reached the middle plateau region, with pressure above 30.50, and by 8 p. m. the area was central over Utah. On the 21st the 12-hour temperature fall was more than 10° over the west part of the middle plateau region, the 24-hour fall was 20° in Alberta, and freezing weather occurred over the plateau region to the Mexican border. During the 22d the temperature fell 20° in western Colorado, and a reading of 2° was recorded at Montrose, Colo. During the 23d this high area settled southward and was apparently dissipated by a decrease of pressure over the Colorado Valley and southern California.

IX.—Appeared over Alberta the evening of the 23d, and the morning of the 24th the pressure rose to 30.74 at Calgary. A decided fall in temperature occurred west of the Missouri and Red River of the North valleys on the 24th, the abnormal 12-hour change varying from 20° to 30° from Colorado to Manitoba; the temperature was below freezing generally over the plateau region, and west of a line traced from southern New Mexico to the west end of Lake Superior; and the lowest temperature of the month occurred over Washington and Oregon. During the 25th this high area passed southward to Utah, with a slight decrease of pressure; a general fall in temperature occurred between the Mississippi River and the Rocky Mountains and over the southern plateau region, the 12 and 24 hour changes ranging from 20° to over 30° in the western Mississippi valley; the line of freezing weather extended from central Texas to the upper lake region; the lowest temperature of the month was noted throughout the plateau regions; and the lowest temperature ever reported for December during the respective periods of observation was noted at Montrose, Colo., Keeler and San Diego, Cal., and Yuma, Ariz. The high area remained nearly stationary over southern Utah and northern Arizona during the 26th, an appreciable decrease of pressure being shown by the 8 p. m. report; the cold wave extended to the Atlantic coast, with temperature falls of more than 20° from the Mississippi River to the Alleghany Mountains; the line of freezing weather extended from near San Antonio, Tex., to the east part of the Lake region; and the lowest temperature of the month occurred from the Mississippi River to the Rocky Mountains. The 8 a. m. report of the 27th locates the center over New Mexico, and higher pressure over the west part of the Gulf of Mexico indicated the formation of a well-defined high area in that region.

X.—This high area was a continuation of number IX, and is given a separate tracing and description on account of the appearance of two distinct anticyclonic centers within an area of high pressure which extended from the plateau region over the Gulf of Mexico the morning of the 27th, one of which, number IX, occupied New Mexico, and the other, number X, the west Gulf. By the evening report of the 27th one center, only, appeared, with highest pressure over the interior of the south Atlantic states. On this date marked temperature falls occurred in the Atlantic coast states, the 12-hour changes ranging from 10° to over 20°, and an abnormal fall in temperature of 32° in 24 hours was noted at Augusta, Ga.; the line of freezing weather extended from Mobile, Ala., northeastward along the Alleghany Mountain range to southern Pennsylvania, and thence eastward to the coast; and the lowest temperature of the month was recorded at stations in the lower Mississippi valley, in the Ohio Valley, and on the south shore of Lake Erie. During the 28th the center moved rapidly northeastward to the lower Saint Lawrence Valley, where it united with an area of high pressure from the Hudson Bay region, after which it passed southeastward over Nova Scotia during the 29th.

XI.—Advanced eastward over California, and the evening of the 28th was central over southwestern Utah, with pressure above 30.30. A marked fall in temperature occurred over the plateau region on this date, the 12-hour changes exceeding 20° over the east-central part of the middle plateau; and freezing

weather occurred over the plateau region north of the 35th parallel. During the 29th the area moved rapidly eastward to the east Gulf states, with slight changes in central pressure; the area of lower temperature moved eastward over the central valleys, a 12-hour temperature fall of more than 10° being noted from the lower lake region to the Gulf; and the line of freezing weather extended from central Texas to the Lake region. During the 30th the center remained nearly stationary over the south Atlantic states, with an increase of pressure; and during the 31st it moved northeastward and united over northern New York with high area XII.

XII.—Appeared over Manitoba the evening of the 29th, preceded on the 28th by a very decided fall in temperature over the British Northwest Territory, the abnormal fall in 12 hours being 42° at Qu'Appelle. On the 29th the cold wave extended over the Lake region, a 12-hour fall of 21° and a 24-hour temperature fall of 32° being noted at Prince Arthur, Ontario. During the 30th the center moved eastward north of the Lake region, with pressure above 30.50; the cold wave extended over the middle Atlantic and New England states and the Canadian Maritime Provinces; an abnormal 12-hour temperature fall of more than 20° was noted in the middle Saint Lawrence valley; and freezing weather occurred over the interior of the Eastern States to the Carolinas. During the 31st the center settled southward and at the close of the month was central over northern New York, with pressure above 30.60; on this date the 12-hour temperature fall exceeded 20° over eastern New England and western Nova Scotia; the 24-hour temperature fall was 40° at Quebec; and the line of freezing weather extended to South Carolina.

LOW AREAS.

The low areas of December advance eastward at an average velocity of about 36 miles per hour. West of the 100th meridian they pursue two principal tracks, one from the Pacific coast north of the 50th parallel south of east to the upper lake region, and the other from Vancouver Island southeastward over the middle plateau and the Rocky Mountain region to the lower Missouri valley. Less frequented tracks are traced from the west part of the Gulf of Mexico to the middle Mississippi valley, and along the Atlantic coast line from the Carolinas to the Canadian Maritime Provinces. East of the 100th meridian the tracks converge and unite over the Saint Lawrence Valley, where an average of more than 5 storms are traced, making this the region of greatest storm frequency within the region of observation. The low areas of December average more than 3 in the Lake region, 2 to 3 in the Ohio and middle and upper Mississippi valleys, and 1 to 2 off the middle and south Atlantic coasts, in the Saskatchewan, Missouri, and lower Mississippi valleys, over the middle and northern plateau regions, and on the north Pacific coast. An average of one storm per month traverses the North American continent from the Pacific to the Atlantic coasts in December.

The tracks of 14 low areas are plotted on Chart I for December, 1891, the average number traced for the corresponding month of the last 17 years being 13. Seven of the low areas advanced from the Pacific coast north of the 45th parallel, one was a continuation of low area XIII for November, 1891, 2 advanced from the British Northwest Territory, 3 apparently developed on the eastern slope of the Rocky Mountains south of the 45th parallel, and one first appeared in the lower Rio Grande valley. Four of the Pacific coast low areas, numbers IV, V, XII, and XIII, traversed the continent, the average rate of advance being 40 miles per hour. The low areas which advanced from the Pacific coast north of the 50th parallel were unusually numerous; their passage over the Pacific slope was attended by excessive rainfall in Washington and Oregon; and the tracks east of the Rocky Mountains were, as a rule, confined to the region north of the 50th parallel. The Pacific coast storms of more southern latitudes, and a low area which appeared over Alberta, advanced to the lower Missouri valley, and passed thence northeastward to the Lake region. The low areas traced from the middle and southeast slopes of the Rocky Mountains, and the low area which appeared over the lower Rio Grande valley, also advanced to the Lake region. During the 17th and 18th a depression of small energy passed northeastward over the Florida Peninsula. The following is a description of low areas traced over the United States and Canada:

I.—Was a continuation of low area XIII traced for November, 1891, and at the opening of the month was central over the Saskatchewan Valley, with pressure below 29.40, whence it moved to Manitoba by the evening of the 1st, with rain from the middle and north Pacific coasts over the northern plateau region, rain and snow in the Red River of the North Valley, and high winds from the middle plateau and middle Rocky Mountain regions over the Great Lakes, the highest velocity noted, 57 miles per hour from the southeast, being reported at Chicago, Ill. By the morning of the 2d the center had moved east of Manitoba, and during that date it disappeared north of the Lake region.

II.—The morning of the 2d the pressure was low from Manitoba and the British Northwest Territory to New Mexico and western Texas, and 3 cyclonic centers appeared, one, low area I, east of Manitoba, one north of Montana, and a third over eastern Colorado. The evening report of the 2d locates the center of low area II over northern Kansas, with pressure below 29.40. On this date the abnormal rise in temperature in 12 hours exceeded 10° in areas east of the Rocky Mountains, and the 24-hour increase was more than 20° in areas south of the Ohio Valley; light rain or snow fell from the plateau region over the middle Missouri and Red River of the North valleys; and wind velocities of 30 to 40 miles per hour were noted from Texas to Montana. During the 3d the center passed to the extreme upper Mississippi valley, with pressure below 29.20; a marked rise in temperature occurred east of the Mississippi River, while from the Red River of the North to Texas the 12-hour temperature fall exceeded 20°; at a number of stations in the eastern-central valleys and the upper lake region the maximum temperature was the highest noted for the month, and at La Crosse, Wis., the temperature was the highest ever reported for December; rain fell generally throughout the central valleys and the Gulf and south Atlantic states, and snow over the middle plateau region and in the upper Missouri and Red River of the North valleys; wind velocities of 30 to 40 miles per hour occurred in the central valleys and the Lake region; a velocity of 52 miles per hour from the south was reported at Cairo, Ill.

During the 4th the center moved to the region north of Lake Superior, with pressure falling below 28.90, a reading of 28:84 being noted at Marquette, Mich., at 8 a. m.; the temperature rose in the early part of the day from the east Lake region to the south Atlantic coast, the abnormal 24-hour rise being 30° at Washington, D. C., where the temperature at 8 a. m. was 24° above the normal; the highest temperature of the month was noted at stations in the northeast districts, and the maximum temperature at Buffalo, N. Y., was the highest ever reported for December; during the day a rapid fall in temperature occurred over the eastern part of the country, except from New England over the Canadian Maritime Provinces, the abnormal 12-hour change being more than 20° at stations in the Lake region, Virginia, and South Carolina; rain fell generally east of the Rocky Mountains, followed by clearing weather in the Southwest, and snow fell in the Northwest; wind velocities of 50 to 60 miles per hour occurred over the Lake region, and a velocity of 63 miles per hour from the southeast was noted at Woods Holl, Mass. During the 5th the center of disturbance passed rapidly eastward north of the Lake region and Saint Lawrence Valley, with an apparent decrease of energy; the clearing condition extended eastward to the Atlantic coast; wind velocities of 30 to 40 miles per hour occurred from the Lake region over New England; and at Lexington, Ky., Buffalo, N. Y., and Woods Holl, Mass., the maximum velocity exceeded 50 miles per hour.

III.—Apparently developed over the east part of the southern plateau region during the early part of the 5th, and the evening of that date was central over Indian Territory, with pressure below 29.70; a marked rise in temperature occurred in the lower Mississippi and Ohio valleys; the highest temperature of the month was recorded at Springfield, Mo., and Vicksburg, Miss.; and a decided fall in temperature was noted over the east part of the plateau region, the abnormal change in 12 hours being 32° at El Paso, Tex. No rain attended this low area on the 5th; snow fell in the middle plateau region. Moving rapidly east-northeast the center reached the lower lake region the night of the 6th, with slight pressure changes; the temperature rose 10° to 18° in the east Gulf states and in the Atlantic coast states south of the 40th parallel; the highest temperature of the month was noted from east Tennessee to northern Florida; the 12-hour temperature fall exceeded 20° from Missouri to eastern Texas; rain fell generally east of the middle and southeast slopes of the Rocky Mountains, except along the Atlantic coast; rain and snow occurred in the Lake region and upper Mississippi valley; and winds of 30 to 40 miles per hour were noted in the central valleys and the south part of the Lake region, the highest velocity, 48 miles per hour from the northwest, being recorded at Chicago, Ill. By the evening of the 7th the center had advanced to the vicinity of Cape Breton Island, where the pressure fell below 29.50. On this date rising followed by falling temperature was noted along the Atlantic coast, the 12-hour temperature fall exceeding 20° from Georgia to Maryland; heavy rain fell in the Atlantic coast states, and snow in the Lake region. By the 8th this low area had passed northeast of Newfoundland.

IV.—Advanced from the Pacific coast north of the region of observation to northern Alberta during the 7th, with pressure falling to 28.88 at Edmonton, N. W. T., at 8 p. m. On the 6th a rapid rise in temperature occurred in Alberta, the abnormal 12-hour change being 25° at Calgary; a marked decrease of pressure was noted along the north Pacific coast; and a wind velocity of 52 miles per hour from the south was reported at Fort Canby, Wash. During the 7th the temperature rose 20° to 30° from the middle-eastern slope of the Rocky Mountains over Manitoba and the north Lake Superior region; heavy rain fell from the north Pacific coast over the northern plateau; and the wind exceeded 50 miles per hour at points from the Washington coast to central Montana, the highest velocity, 98 miles per hour from the south, being reported at Fort Canby, Wash. During the 8th the center advanced to the region north of Lake Superior without an apparent loss of energy; the temperature rose 10° to 20° from the upper Mississippi valley over the Lake region and Saint Lawrence Valley; the highest temperature of the month was noted in the Red River of the North Valley; wind velocities of 30 to 40 miles per hour occurred from the Missouri Valley over the Lake region, and a maximum velocity of more than 50 miles per hour was reported at Chicago, Ill., and Fort Assinaboine, Mont. On this date there was a general absence of precipitation within the region covered by this low area. By the evening of the 9th the center of disturbance had advanced north of the Gulf of Saint Lawrence, unattended by general rain; high winds prevailed from the Lake region eastward, and a velocity of 51 miles per hour from the southwest was reported at Woods Holl, Mass. This low area traversed the north Atlantic Ocean, and its history subsequent to the 9th is given under "North Atlantic storms."

V.—Followed closely after number IV and reached the Saskatchewan Valley the morning of the 9th, with pressure below 29.40, whence it advanced rapidly eastward and the evening of that date was central north of Lake Superior. Rain continued on the north Pacific coast as far south as central California during the 8th, with higher followed by falling temperature north of the 40th parallel. On the 9th light rain or snow fell in areas from the middle and north Pacific coasts to the Lake region; a marked fall in temperature occurred in the Northwest, the 12-hour change exceeding 20° at Calgary; and high winds, reaching a maximum velocity of 56 miles per hour from the west at Cheyenne, Wyo., prevailed over the north-central districts. By the evening of the 10th the center reached the lower Saint Lawrence valley, with an apparent loss of energy.

On the 10th a trough of relatively low pressure extended from low area V southwestward over the Lake region and the central valleys to the south part of the southern plateau region, and the evening report indicated the development of a cyclonic area over or south of New Mexico. High area III occupied the south Atlantic coast, with pressure above 30.40, and high area IV advanced over Oregon, with pressure above 30.70. The morning of the 11th high area V, an offshoot from high area IV, was central over Nebraska, the pressure had risen .50 to .70 in 24 hours over the central and north-central districts, and a ridge of high pressure extended from the north Pacific to the south Atlantic coasts. This distribution of pressure prevented the development and advance of the southern plateau low area, and it disappeared by an increase of pressure during the 11th. Owing to the marked barometric gradient from southern Arizona and southern California northward, a heavy windstorm or "norther" prevailed over the west part of the southern plateau region and southern California on the 10th and 11th.

VI.—Apparently advanced from the British Northwest Territory and on the 12th was central over Alberta, with pressure below 29.70, whence it advanced to South Dakota by the evening of the 13th, with rain in the middle Missouri and upper Mississippi valleys, and a decided increase in temperature in the central valleys. During the 14th the center moved southward to Kansas, and with the eastward movement of high area VI from north of the Lake region it moved northeastward to Iowa by the evening of the 14th, with a slight increase of energy. On this date rain fell generally in the central valleys and the Lake region; a marked rise in temperature occurred east of the Mississippi River and south of the Great Lakes; the highest temperature of the month was noted along the middle Mississippi river; and the temperature fell 10° to 20° in 12 hours from the west Gulf states to the middle Missouri valley. During the 15th the center advanced over the Lake region, with pressure below 29.50; rain fell generally east of the Mississippi River, the rainfall being excessive at points in the east Gulf states; and higher followed by lower temperature was noted from the west part of the Lake region to the east Gulf coast. During the 16th the center advanced to the Gulf of Saint Lawrence, where the pressure fell to 28.88 at Sydney, C. B. I., and at Eastport, Me., the 12-hour decrease of pressure was .94; the clearing condition extended to the Atlantic coast, with 12-hour temperature falls of 10° to 20° in the Atlantic coast states and the Lake region; and wind velocities of 40 to 60 miles per hour occurred along the New Jersey and New England coasts. By the 17th the center had passed north of the Banks of Newfoundland.

VII.—During the 12th two low areas apparently advanced from the British Northwest Territory, one, number VI, passing southward, and the other, number VII, moving eastward to the Lake Superior region, where it was located the evening of that date, whence it moved rapidly eastward to the region north of the Gulf of Saint Lawrence by the evening of the 13th, and advanced thence north of Newfoundland. With the exception of high winds over the lower lakes on the 12th, the passage of this low area was unattended by noteworthy features.

VIII.—Apparently moved from the Pacific coast north of Vancouver Island to Alberta during the 16th, with pressure below 29.50; rain on the middle and north Pacific coasts; and winds exceeding 50 miles per hour on the Washington coast. During the 17th this low area apparently dissipated in the Saskatchewan Valley in the rear of high area VII, which occupied the north-central part of the country on that date.

IX.—Apparently moved eastward north of Washington during the 18th, with central pressure below 29.70, rain along the Pacific coast north of the 40th parallel, and high winds on the Washington coast. During the 19th the center occupied the

Saskatchewan Valley, with pressure below 29.50, rain along the Pacific coast, rain and snow over the middle and northern plateau regions, an increase in temperature east of the 115th meridian, a decrease in temperature of 5° to 10° in 12 hours along the Pacific coast and over the west part of the plateau region, and fresh to high winds from the north Pacific coast to the upper lake region. During the 20th the pressure change in 12 hours was more than .30 over the north part of the northern plateau region, and the approach of a cyclonic area from the Pacific coast north of the region of observation was indicated. This low area apparently united with low area IX which had remained nearly stationary over Alberta. Rain and snow fell over the middle plateau and northern Rocky Mountain regions, and on the Pacific coast rain was followed by clearing weather in the southern districts; high winds occurred on the north Pacific coast, a velocity of 62 miles per hour from the west being noted at Tatoosh Island, Wash. The morning of the 21st a trough of low pressure extended from Manitoba to the Rio Grande Valley with two cyclonic centers, one, low area IX, in Manitoba, and the other, low area X, in Nebraska. By the evening report the two centers had united over Iowa.

X.—With the union of this low area and low area IX cloudy and rainy weather prevailed from the Gulf of Mexico northward, the precipitation being in the form of snow in the more northern districts; at the 8 p. m. report of the 21st the pressure fell below 29.50; fresh gales had been noted in the north part of the central valleys and the western Lake region; the temperature had risen decidedly from the middle and upper Mississippi River to the Alleghany Mountains, and a marked fall in temperature had occurred from Manitoba to the Rio Grande Valley. During the 22d the center passed to the southern Hudson Bay region, without an apparent loss of energy, after which it advanced rapidly eastward and passed off the Labrador coast during the 23d.

XI.—On the 21st a trough of low pressure extended over the central valleys from Manitoba and the Lake Superior region to the Rio Grande Valley. By the evening of the 22d the approach of high area VIII from the Pacific coast caused a marked increase of pressure over the central districts, and a ridge of comparatively high pressure extending from the middle plateau region to the middle Atlantic coast separated low area X, which was central in the Hudson Bay region, and low area XI, which had appeared in the Rio Grande Valley. A third low area, number XIII, appeared on the north Pacific coast. The early history of low area XI was, in many respects, similar to that of the remarkable low area of November 21st–24th, 1891, and the causes which seemed to contribute to its dissolution are, therefore, of interest. With its appearance in the lower Rio Grande valley general rain and temperature above the normal prevailed over the greater part of the central valleys and the Lake region. The morning of the 23d it was central over eastern Texas, with pressure below 29.80, and a trough of low pressure extended thence northeastward to the Saint Lawrence Valley. By the evening report the center had advanced to northern Mississippi, where the pressure fell below 29.60, the lowest pressure noted during its course.

The morning report of the 23d shows temperature considerably above the normal over the east Gulf and Atlantic states, while from the Lake region to Texas there had been a decided fall in temperature. During that date the wave of lower temperature extended eastward to the Alleghany Mountains; heavy rain fell about the center, with clearing weather from the Lake region to Texas. The forces necessary to the further development of energy were in part withdrawn by two areas of low pressure which dominated the weather conditions over the northern districts, one of which, low area X, occupied the Gulf of Saint Lawrence region, and the other, low area XII, the upper Missouri valley. The morning report of the 24th showed a diminution of energy on the part of number XI and an increase of strength in number XII, the latter being central over Kansas, and by the evening report an area of high pressure had advanced from the Hudson Bay region over the Canadian Maritime Provinces, with an increase of pressure of more than .40 in 12 hours over the Gulf of Saint Lawrence. With high pressure occupying its line of advance, and low areas of greater strength absorbing its energy, this low area dissipated south of the lower lake region during the night of the 24th.

XII.—Appeared on the north Pacific coast on the 22d, with pressure below 29.50, heavy rain, and wind velocities exceeding 50 miles per hour on the Washington coast. By the 23d the center had advanced to the upper Missouri valley, with a slight loss of energy; high west winds occurred on the north Pacific coast, and the rain area extended over California to the 35th parallel, and thence over the plateau region to the northeast slope of the Rocky Mountains, with snow from the middle plateau region northward. During the 24th the center moved to the lower Missouri valley, and the evening report showed a secondary low area of considerable strength over western Texas, whence it apparently advanced rapidly northeastward and united with number XII in the Lake region by the morning of the 25th. The evening of the 25th the center occupied upper Michigan, with pressure below 29.50; rain had fallen in the central districts and the Lake region, and snow in the more northern districts to the westward of the storm-center. The temperature fall following this low area and preceding high area IX was very marked, the 12-hour change exceeding 30° from Minnesota to Arkansas. During the 26th the center moved eastward to the lower Saint Lawrence valley, with a decided increase of energy; the pressure fell to 29.12 at Father Point, Quebec, and there was a decrease of .66 in 12 hours at that place; rain, followed by clearing weather, prevailed south of the Lake region, and snow and rain were general in the Lake region; the cold wave extended to the Alleghany Mountains; and gales prevailed over the Great Lakes, a velocity of 66 miles per hour from the southwest being noted at Buffalo, N. Y. The morning report of the 27th showed pressure 28.90 at Father Point, Quebec, and decidedly colder, clearing weather in the Atlantic coast states. By the evening report the center had passed north of Newfoundland.

XIII.—The approach of this low area toward the Pacific coast north of the 50th parallel was shown by reports of the 25th, and by the evening of the 26th it was central near Vancouver Island, with pressure 29.10 at Port Angeles, Wash. On this date rain fell on the middle and north Pacific coasts, and thence over the middle and northern plateau regions, and snow in the upper Sacramento valley; heavy gales prevailed on the north Pacific coast, a velocity of 88 miles per hour from the south being recorded at Fort Canby, Wash. During the 27th the center advanced to the Saskatchewan Valley, without an apparent loss of energy; rain fell from the south Pacific coast over the plateau region to the upper Missouri valley, and snow in Montana and the British Northwest Territory; the temperature rose decidedly from the Lake region and middle Mississippi valley to the middle Missouri valley; a cold wave overspread the districts lying between the middle and northern Pacific coasts and the northeast slope of the Rocky Mountains; and wind velocities of 50 to 60 miles per hour occurred from the middle plateau region to the upper Missouri valley.

During the 28th the center of disturbance advanced to the region north of Lake Superior; the temperature rose 10° to 20° from the Lake region to the Gulf of Mexico, and fell 20° to 40° in 12 hours in the British Northwest Territory; the rain area did not advance east of the Mississippi River; high winds prevailed over the Lake region, a velocity of 56 miles per hour from the southwest being noted at Chicago, Ill. During the 29th the center advanced to the upper Saint Lawrence valley, skirting the west quadrant of high area X which occupied the Canadian Maritime Provinces. A marked decrease of energy was shown on this date; the rain area extended to the Atlantic coast, and the cold wave advanced to the Alleghany Mountains. During the 30th this low area increased in energy

and moved to the south New England coast and thence to western Nova Scotia; clearing weather occurred in the Atlantic coast states; falling followed by rising temperature was noted from the Lake region and Mississippi River eastward; and wind velocities exceeding 50 miles per hour were recorded at points along the Atlantic coast north of the Carolinas. By the 31st the center had passed over the Gulf of Saint Lawrence.

XIV and XIV*a*.—Number XIV was central off the northwestern coast of Washington the morning of the 29th, with pressure below 29.00, heavy gales reaching a velocity of 85 miles per hour from the west at Fort Canby, Wash., and heavy rain on the Pacific coast north of the 35th parallel. By the evening report the center had advanced to the region north of Montana, with an apparent loss of strength, and by the morning of the 30th had moved to the upper Missouri valley, after which it apparently united with XIV*a*, which appeared over the middle plateau region the morning of that date. Low area XIV*a* moved eastward to the vicinity of Salt Lake City, Utah, by the evening of the 30th, without evidence of marked energy, whence it passed to Indian Territory by the close of the month, when a trough of low pressure extended from the western Lake region to Texas, with marked barometric gradients to the east and west. A notable feature of these low areas was the exceptionally heavy snowfall over the middle plateau region during the 29th and 30th.

On the last day of the month a low area of considerable energy was central off the north Pacific coast, where the pressure fell below 29.60, and high winds reaching a velocity of 72 miles per hour from the southeast at Fort Canby, Wash., were noted. On this date an area of high pressure advanced from the Pacific Ocean over California to the middle plateau region; snow fell in the Sacramento Valley, and over the middle and northern plateau regions, and rain prevailed along the Pacific coast.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.									
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°	°	°	Days.	Miles.		Inch.			°					
I*	1	34	82	44	64	3.0	21	Father Point, Quebec	.28	3	Lynchburgh, Va	7	1	Key West, Fla.	ne.	28	1
II	2	42	124	34	76	3.5	36	Cairo, Ill	.44	4	Palestine, Tex	24	3	Savannah, Ga.	w.	36	4
III	5	44	125	35	83	3.5	36	Abilene, Tex	.46	6	El Paso, Tex	32	5	Helena, Mont	sw.	36	6
IV†	10	45	115	37	108	6.0	6	Tatoosh Island, Wash	.41	10	Pueblo, Colo	21	10	Helena, Mont	w.	30	10
V	11	42	101	33	81	2.5	25	White River, Ont	.42	11	Winnipeg, Man	20	10	Kitty Hawk, N. C	ne.	34	12
VI	14	50	85	44	68	1.0	33	Quebec, Quebec	.38	14	Montreal, Quebec	17	14	Block Island, R.I	e.	38	15
VII	15	53	104	46	69	4.5	24	Father Point, Quebec	.60	17	Chicago, Ill	23	15	Kitty Hawk, N. C	n.	38	18
VIII	22	41	113	35	115	1.0	25	Salt Lake City, Utah	.32	22	Montrose, Colo	20	22	Yuma, Ariz	nw.	24	22
IX	24	51	114	35	107	3.0	20	Fort Assinaboine, Mont.	.66	23	La Crosse, Wis	37	25	Pueblo, Colo	w.	46	26
X	27	28	92	45	63	2.0	49	Brownsville, Tex	.40	26	Raleigh, N. C	23	27	Galveston, Tex	nw.	36	26
XI	28	37	113	44	74	3.0	35	Pueblo, Colo	.52	28	Winnemucca, Nev	26	27	Savannah, Ga	nw.	34	30
XII	29	52	97	44	74	2.0	27	White River, Ont	.66	30	Qu'Appelle, N. W. T	42	28	Erie, Pa	se.	30	31
Mean						2.9	28		.46			24				34	
Low areas.									Fall.			Rise.					
I‡	1	52	109	52	93	1.0	29	Indianapolis, Ind	.24	1	Shreveport, La	18	1	Chicago, Ill	se.	37	1
II	2	40	103	51	68	3.5	24	Chatham, N. B	.76	5	Concordia, Kans	17	2	Woods Holl, Mass	se.	63	4
III	5	35	98	47	60	2.0	50	Sydney, C. B. I	.52	7	El Paso, Tex	24	4	Chicago, Ill	nw.	48	6
IV	7	53	128	51	63	2.5	46	Swift Current, N. W. T	.54	7	Calgary, N. W. T	25	6	Fort Canby, Wash	s.	98	7
V	9	54	110	50	67	1.5	53	Halifax, N. S	.22	10	Shreveport, La	16	9	Cheyenne, Wyo	w.	56	9
VI	12	52	114	48	60	4.5	31	Eastport, Me	.94	16	Yarmouth, N. S	23	16	Pueblo, Colo	n.	60	14
VII	12	55	106	50	61	1.5	56	Sydney, C. B. I	.36	13	Prince Arthur, Ont	13	12	Buffalo, N. Y	sw.	50	13
VIII	16	52	128	53	108	1.0	35	Edmonton, N. W. T	.40	16	Moorhead, Minn	14	17	Fort Canby, Wash	se.	52	16
IX	18	51	128	50	97	2.5	32	Battleford, N. W. T	.44	19	Pueblo, Colo	15	19	Tatoosh Island, Wash	w.	62	20
X	21	42	99	52	64	2.0	41	Sault de Ste. Marie, Mich.	.36	22	Louisville, Ky	19	21	Chicago, Ill	sw.	44	22
XI	22	26	99	38	85	1.5	33	Parkersburgh, W. Va	.34	24	Little Rock, Ark	10	22	Vicksburg, Miss	w.	48	23
XII	22	50	126	51	65	4.5	32	Father Point, Quebec	.66	26	Saint Vincent, Minn	25	23	Buffalo, N. Y	sw.	66	26
XIII	26	52	128	43	63	4.5	31	Medicine Hat, N. W. T	.72	27	Rockliffe, Ont	33	28	Fort Canby, Wash	s.	88	26
XIV	29	48	127	48	107	1.0	40	Spokane, Wash	.54	29	Medicine Hat, N. W. T	35	29	Fort Canby, Wash	w.	85	29
XIV*a*	30	42	117	37	98	1.5	31	White River, Ont	.54	31	Pueblo, Colo	25	30	Pueblo, Colo	n.	42	31
Mean						2.3	38		.51			21				61	

*Continuation of high area VIII for November, 1891. †Remained nearly stationary over middle plateau, 11th to 15th, inclusive. ‡Continuation of low area XIII for November, 1891.

NORTH ATLANTIC STORMS FOR DECEMBER, 1891 (pressure in inches and millimeters; wind-force by Beaufort scale).

The paths of storms that appeared over the west part of the north Atlantic Ocean are shown on Chart I. These paths have been determined from reports of shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

In December there is usually an increase of pressure over the north Atlantic Ocean south of the 30th parallel and from the British Isles over the Azores and Cape Verde Islands. Between the Azores and the coast of the United States and thence northward there is a decrease of pressure, the decrease being most marked within the Iceland area of low pressure, where it exceeds .20. The normal distribution of pressure over the north Atlantic in December shows a belt of high pressure stretching across the ocean between the 30th and 40th parallels, with values above 30.10 (764), from which there is a marked gradient to Iceland and southern Greenland, where the pressure falls below 29.50 (749). This distribution of pressure has an apparent effect upon the course of ocean storms; they follow two principal tracks which diverge from the main continental track east of Newfoundland, one running directly into the Iceland low area, and the other skirting its southern quadrants and passing north of the British Isles. The average velocity of north Atlantic storms in December is about 21 miles per hour, and an average of 3 storms traverse the ocean from the American to the European coasts in that month.

The storms traced over the north Atlantic Ocean for December, 1891, were attended by gales of seasonal severity. Three of the storms traversed the ocean, the tracks being plotted from the Canadian Maritime Provinces to the region north of the British Isles. One of these storms is traced as low area IV; it left the Pacific coast on the 7th, passed north of Newfoundland the night of the 9–10th, was central west of the British Isles on the 13th, and disappeared in the direction of Scandinavia by the 14th. The following is a description of the storms which appeared during the month:

The month opened with low pressure from Newfoundland to

the British Isles. A storm of marked energy was central over mid-ocean in high latitudes, with pressure below 29.00 (737) and gales of force 10 to 11 along the trans-Atlantic tracks, and a storm of moderate strength was central south of the Banks of Newfoundland. Under the influence of high area I high pressure obtained off the American coast from Nova Scotia to the West Indies. The slow passage of this high area northeastward off the coast of the United States and thence over Nova Scotia caused a continuance of high pressure and generally fine weather west of the 60th meridian during the first five days of the month. On the 2d the storm south of the Grand Banks on the 1st had passed northeastward and united with the storm which occupied mid-ocean, and pressure below 29.00 (737) and gales of hurricane force were reported between the 20th and 40th meridians. Pressure falling to 29.10 (739) was noted in England, and southwesterly winds and rain prevailed over the British Isles.

By the 3d the mid-ocean storm had apparently moved northeastward; pressure falling to 29.30 (744) was reported near the Hebrides; and southerly winds prevailed over the British Isles, with rain in Great Britain. The pressure continued low over mid-ocean and off the British Isles during the 4th, after which there was an increase of pressure in those regions. By the 5th high area I had passed southeastward from Nova Scotia and was central south of the Banks of Newfoundland, and the pressure was generally above the normal over the entire ocean. By the 6th high area I had joined the permanent Atlantic high area, and high area II appeared off the south Atlantic coast of the United States. Low area II had advanced from the Saint Lawrence Valley, and occupied the region north of Newfoundland. The night of the 6th a storm, with pressure below 29.10 (739), is reported as having moved northeastward over Great Britain, causing damage to shipping along the French and English coasts. On the 7th high area II moved east of Bermuda; low area II passed north of the Grand Banks, without evidence of marked energy; and pressure was above the normal from the Azores to the British Isles.

On the 8th the pressure continued high between the 30th and 40th parallels; low area II had advanced to mid-ocean in high latitudes, attended by whole gales; and the night of the 7–8th southerly gales prevailed over Newfoundland. On the 9th high pressure prevailed over the southeastern part of the United States under the influence of high area III, and the pressure was high thence eastward over the ocean; low area II advanced eastward, with gales of force 9 to 11 between the 10th and 30th meridians. During the 10th high pressure continued south of the 40th parallel; low area II passed over or north of Scotland, with pressure falling to about 28.60 (726) near the Shetland Islands, and southwesterly gales prevailed over the British Isles. The storm set in over Great Britain and Ireland the night of the 9th and continued with destructive violence during the 10th, causing many disasters and loss of life on land and sea. Low area IV, which had advanced from the north Pacific coast, was central northeast of Newfoundland the morning of the 10th. The pressure continued high south of the 40th parallel during the 11th; low area IV had advanced to mid-ocean, with pressure falling to about 29.50 (749); low area V had advanced to northern Newfoundland; and low area II had passed over the North Sea, without an apparent loss of energy.

By the 12th low area IV had advanced east of the 30th meridian, with pressure below 29.00 (737) and gales of force 10 to 11; and low area V was apparently central north of the Grand Banks. Low area IV moved over the north part of the British Isles during the 13th, with pressure falling to about 29.20 (742); low area V advanced to about the 40th meridian, with central pressure near 29.50 (749); and the pressure was high off the middle and south Atlantic coasts of the United States under the influence of high area V. High area V was central off the south Atlantic coast on the 14th; low area V advanced to mid-ocean with a moderate display of strength; and low area IV had disappeared in the direction of the Baltic Sea, where pressure 28.90 (734) was reported. On the 15th low area VII, which had moved eastward north of the Gulf of Saint Lawrence during the 13th, was central over mid-ocean, with pressure about 29.20 (742), and gales of hurricane force; low area V occupied a position northwest of Ireland; and high area V remained central near Bermuda. By the 16th low area VII had apparently developed marked energy, and the passage of low area VI over New England and the south part of the Gulf of Saint Lawrence caused low pressure and fresh gales south of Nova Scotia.

The night of the 16th low area VI passed northeastward over Newfoundland, with pressure falling to 29.11 (739) at Saint Johns, and strong southeast gales, heavy rain, and snow. On the 17th this storm was central north of the Grand Banks, and a fresh southwest gale was reported at Bermuda. On this date a slight cyclonic area approached the Florida Peninsula from the east Gulf. On the 18th low area VI reached mid-ocean in high latitudes, with pressure about 29.20 (742), and gales reaching force 10 to 11; the cyclonic area from the east Gulf crossed the Florida Peninsula, and afterwards apparently dissipated off the south Atlantic coast. During the 19th the pressure was high along the middle Atlantic coast under the influence of high area VII; the pressure continued low over mid-ocean; and high pressure prevailed over the British Isles. On the 20th high area VII passed southeastward from Nova Scotia, the pressure continued abnormally high over the British Isles; and low pressure prevailed between the 30th and 50th meridians. From the 21st to 23d the pressure continued high over the east and west parts of the ocean, and a low area occupied the region lying south of Iceland.

On the 24th low area X, which had passed north of the Saint Lawrence Valley during the 23d, was apparently central south of Greenland, with gales of force 10 to 11 over and east of the Grand Banks. By the 25th this storm had advanced to mid-ocean, with pressure below 29.00 (737) and gales of hurricane force, and on the 26th was central northwest of the British Isles, whence it moved eastward north of Scotland by the 27th. On the 23d low area XII passed eastward north of Newfoundland, and reached mid-ocean by the 28th, attended by pressure falling to about 29.00 (737) and gales of force 10 to 11. By the 29th this storm had advanced to the region south of Iceland, where it apparently remained nearly stationary until the 30th, after which it probably passed over or north of the North Sea. From the 27th to 29th high pressure prevailed along the Atlantic coast of the United States, attending the passage of high area X from the Gulf of Mexico to Nova Scotia. At the close of the month the pressure was high over mid-ocean, and low pressure and fresh gales prevailed south of Nova Scotia under the influence of low area XIII which occupied the Gulf of Saint Lawrence.

OCEAN ICE IN DECEMBER.

No Arctic ice was reported for December, 1891. In December, 1882, 1883, 1884, 1886, and 1888, no Arctic ice was reported near Newfoundland and the Grand Banks. In 1885 several icebergs were observed off the Newfoundland coast the latter part of the month. In 1887 a small iceberg was reported in N. 46° 10′, W. 47° 28′ on the 26th, and a small iceberg in N. 48° 20′, W. 48° 40′ on the 28th.

FOG IN DECEMBER.

The limits of fog belts west of the 40th meridian, as determined from reports of shipmasters, are shown on Chart I by dotted shading. East of the 55th meridian fog was reported on 4 dates; between the 55th and 65th meridians on 4 dates; and west of the 65th meridian on 5 dates. Compared with the corresponding month of the last 4 years the dates of occurrence of fog east of the 55th meridian numbered the same as the average; between the 55th and 65th meridians one less than the average; and west of the 65th meridian 2 less than the average. The occurrence of fog along the steamship tracks west of the 40th meridian and at stations of the Weather Bureau along

the New England and middle Atlantic coasts generally attended the approach or passage of general storms.

A notable feature of the month was the exceptionally dense fog which enveloped London, England, from the 22d to 26th.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for December, 1891, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over extreme southern Florida, where it was above 70; it was above 60 over the Florida Peninsula, in extreme southern Louisiana, and in the lower Rio Grande valley; and was above 50 over the southern half of the Gulf States, along the Mississippi River to Memphis, Tenn., over extreme southern California and southwestern Arizona, and along the immediate Pacific coast south of San Francisco, Cal. The mean temperature was lowest in Manitoba and thence over the Saskatchewan Valley east of the 110th meridian, where it was below 10; it was below 15 over northern North Dakota and northwestern Minnesota, and in the mountains of central Colorado; and was below 30 north of a line traced from the south part of the Gulf of Saint Lawrence westward over the Lake region and the upper Mississippi valley to north-central Nebraska, thence southward to central New Mexico, thence west-northwest to the Sierra Nevada range of mountains, which it followed to central Oregon, thence eastward over the valley of the Columbia River to northern Idaho, and thence northwestward over British Columbia.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was generally above the normal east of the Rocky Mountains and in northeastern Oregon and eastern and northern Washington; elsewhere it was below the normal. The most marked excess in temperature was noted in northern Ontario, where it was more than 10, and the excess was more than 5 in the Atlantic coast states north of Virginia, and in districts north of the Ohio and Missouri Rivers. The most marked deficiency was reported over the middle and southern plateau regions, where it was more than 5, and a slight deficiency was noted along the immediate middle Gulf coast from western Florida to eastern Texas.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for December for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for December, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for December during the period of observation and the years of occurrence:

Deviations from normal temperature—Continued.

State and station.	County.	(1) Normal for the month of Dec.	(2) Length of record.	(3) Mean for Dec., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for December.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	Years	°	°	°		°	
Lead Hill	Boone	39.4	10	44.4	+ 5.0	55.3	1889	29.1	1884
California.									
Sacramento	Sacramento	46.7	37	38.7	− 8.0	50.9	1861	39.4	1891
Connecticut.									
Middletown	Middlesex	28.6	23	37.9	+ 9.3	37.9	1891	21.8	1872
Florida.									
Merritts Island	Brevard	62.6	9	68.0	+ 5.4	68.0	1891	58.0	1885
Georgia.									
Forsyth	Monroe	49.8	17	52.0	+ 2.2	61.3	1889	39.8	1876
Illinois.									
Peoria	Peoria	29.3	36	38.5	+ 9.2	44.3	1877	18.5	1876
Riley	McHenry	22.9	35	31.4	+ 8.5	37.7	1877	11.1	1876
Indiana.									
Vevay	Switzerland	34.9	26	41.7	+ 6.8	49.0	1889	24.6	1876
Iowa.									
Cresco	Howard	17.4	20	28.3	+10.9	34.0	1877	4.5	1876
Monticello	Jones	21.8	37	31.3	+ 9.5	39.5	1877	8.1	1859
Logan	Harrison	26.0	17	34.6	+ 8.6	39.6	1889	15.4	1879
Kansas.									
Lawrence	Douglas	30.7	24	38.3	+ 7.6	44.8	1889	19.8	1872
Wellington	Sumner	33.3	12	.....	.....	46.2	1889	23.1	1884
Louisiana.									
Grand Coteau	Saint Landry	56.3	9	54.7	− 1.6	65.0	1889	51.8	1887
Maine.									
Orono	Penobscot	20.8	21	31.6	+10.8	31.6	1891	11.4	1890
Maryland.									
Cumberland	Allegany	31.9	32	39.6	+ 7.7	43.2	1889	24.8	1866
Massachusetts.									
Amherst	Hampshire	33.6	45	37.2	+ 3.6	37.2	1891	19.5	1872
Newburyport	Essex	30.2	13	37.9	+ 7.7	37.9	1891	23.4	1890
Somerset	Bristol	30.6	19	40.7	+10.1	40.7	1891	21.8	1876
Michigan.									
Kalamazoo	Kalamazoo	29.4	15	36.0	+ 6.6	40.2	1889	16.7	1876
Thornville	Lapeer	27.7	14	35.4	+ 7.7	38.0	1889	19.6	1886
Minnesota.									
Minneapolis	Hennepin	15.5	27	27.2	+11.7	31.6	1877	1.9	1872
Montana.									
Fort Custer	Custer	22.8	12	29.4	+ 6.6	33.1	1885	5.6	1884
New Hampshire.									
Hanover	Grafton	20.6	53	29.5	+ 8.9	31.2	1847	10.2	1872
New Jersey.									
Moorestown	Burlington	32.4	28	40.7	+ 8.3	41.0	1889	23.9	1876
South Orange	Essex	31.8	21	39.6	+ 7.8	39.6	1891	24.3	1872
New York.									
Cooperstown	Otsego	27.1	37	33.9	+ 6.8	33.9	1891	14.7	1876
Palermo	Oswego	24.8	37	33.8	+ 9.0	33.8	1891	16.8	1880
North Carolina.									
Lenoir	Caldwell	38.2	19	41.7	+ 3.5	48.9	1889	29.1	1876
Ohio.									
N'th Lewisburgh	Champaign	30.1	59	39.0	+ 8.9	44.3	1889	19.0	1876
Wauseon	Fulton	27.2	21	35.5	+ 8.3	38.8	1877,'89	17.1	1872
Oregon.									
Albany	Linn	41.6	12	41.0	− 0.6	49.5	1886	32.1	1884
Eola	Polk	40.0	20	40.2	+ 0.2	47.0	1886,'87	30.7	1884
Pennsylvania.									
Dyberry	Wayne	25.3	24	34.6	+ 9.3	34.6	1891	17.3	1876
Grampian Hills	Clearfield	25.6	27	34.8	+ 9.2	37.0	1877	16.0	1876
Wellsborough	Tioga	29.5	12	34.6	+ 5.1	39.5	1881	22.2	1890
South Carolina.									
Statesburgh	Sumter	47.6	10	50.6	+ 3.0	56.6	1889	43.6	1882
Tennessee.									
Austin	Wilson	40.8	21	46.9	+ 6.1	56.5	1889	25.0	1876
Texas.									
New Ulm	Austin	54.4	18	55.4	+ 1.0	65.8	1889	46.1	1876
Vermont.									
Strafford	Orange	21.6	18	31.2	+ 9.6	31.2	1891	13.4	1890
Virginia.									
Birdsnest	Northampt'n	41.5	23	46.8	+ 5.3	51.1	1879	32.7	1876
Washington.									
Fort Townsend	Jefferson	41.2	16	38.4	− 2.8	45.3	1885	33.0	1884
Wisconsin.									
Madison	Dane	22.9	22	31.1	+ 8.2	38.7	1877	11.7	1876

YEARS OF HIGHEST MEAN TEMPERATURE FOR DECEMBER.

Over the greater part of New England and in parts of eastern New York, eastern Pennsylvania, and New Jersey the current month was the warmest December on record. In New England the mean temperature was 6 to 10 above the normal, and 1 to 2 above the highest mean previously reported for December, noted in 1881 and 1889; in eastern New York, eastern Pennsylvania, and New Jersey the mean was 6 to 9 above the normal, and about 1 above that of 1889; and at Merritts Island, Fla., the mean for the current month was 5.4 above the normal, and 1 above the mean of 1883. The highest mean

temperature for December occurred on the south Pacific coast, in the upper valley of the Columbia River, over northern North Dakota, and in the lower valley of the Red River of the North in 1890; from the middle and southern plateau regions to the Atlantic coast south of the 40th parallel in 1889; along the Pacific coast north of San Francisco, Cal., in 1886; on the northeastern slope of the Rocky Mountains in 1885; and over the upper lake region and upper Mississippi valley in 1877.

YEARS OF LOWEST MEAN TEMPERATURE FOR DECEMBER.

At stations in the middle and southern plateau regions and on the middle and south Pacific coasts the mean temperature for the current month was the lowest ever reported for December. In the middle and southern plateau regions the mean temperature was 5 to 7 above the normal, and 1 to 3 above the highest mean previously noted for December, and on the middle and south Pacific coasts it was 4 to 5 above the normal, and 1 to 2 above the highest mean temperature on record for the month. The lowest mean temperature for December occurred generally east of the Mississippi River and south of the Lake region in 1876, and from the northeastern slope of the Rocky Mountains to the north Pacific coast in 1884.

MAXIMUM TEMPERATURE.

At New York and Buffalo, N. Y., Norfolk, Va., La Crosse, Wis., and Duluth, Minn., the maximum temperature for the current month was the highest ever reported for December by amounts varying from 1 at Norfolk, Va., and Buffalo, N. Y., to 9 at La Crosse, Wis.; at Rio Grande City, Tex., and Roseburgh, Oregon, the maximum temperature was as high as previously reported for the month.

The maximum temperature was above 80 over the Florida Peninsula, at stations along the immediate middle Gulf coast, and in the lower Rio Grande valley, and it was above 70 on the Atlantic coast south of Delaware, and generally south of the 35th parallel, except in northern Georgia, and over the greater part of New Mexico. The maximum temperature was lowest in eastern Upper Michigan, from the Red River of the North over North Dakota, and on the northeastern slope of the Rocky Mountains, where it was below 50.

MINIMUM TEMPERATURE.

At Montrose, Colo., Yuma, Ariz., and Keeler, Cal., the minimum temperature for the current month was the lowest ever reported for December by amounts varying from 1 at Montrose, Colo., to 6 at Keeler, Cal. (7 years' record), and at San Diego, Cal., the minimum temperature was as low as previously reported for the month.

The minimum temperature fell below —20 in the Red River of the North Valley, over the eastern part of the Dakotas, and in the Rocky Mountain range from central Colorado northward. The minimum readings were below zero in northern New England and northeastern New York, and north of a line traced from Upper Michigan southwestward to central New Mexico, thence to western Nevada, and thence to northern Idaho.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line traced from the Atlantic coast at Jacksonville, Fla., westward along or near the immediate Gulf coast line to the lower Rio Grande valley. The western limit of freezing weather is shown by a line traced along the immediate south and middle California and Oregon coasts.

RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature, 81, was noted at Fort Assinaboine, Mont.; the monthly ranges exceeded 70 in areas in the central and north-central districts. From the interior of the country the monthly ranges decreased eastward to less than 50 along the immediate Atlantic coast; southward to less than 40 on the middle Gulf coast; and westward to less than 30 on the middle and north Pacific coasts.

PERIODS OF HIGH TEMPERATURE.

On the 1st the warmest weather of the month was noted in the central valleys of California and generally over the plateau region, where the temperature was 5 to 16 above the normal. By the 2d this warm wave had passed east of the Rocky Mountains; it extended over the east-central valleys and the Lake region during the 3d, and reached the Atlantic coast the morning of the 4th, with temperature more than 20 above the normal at points between the lower lake region and the Carolinas. A marked increase in temperature occurred over the southeast part of the plateau region on the 4th; this warmer condition extended eastward over the Gulf States and reached the Atlantic coast by the morning of the 7th, when the temperature was more than 20 above the normal at points between Nova Scotia and Florida.

During the 6th and 7th a marked increase in temperature was shown over the British Northwest Territory. During the 8th the warmer condition extended over the northern districts east of the Pacific coast, with the highest temperature of the month in the Red River of the North Valley and North Dakota, and by the 9th it extended southward over the eastern slope of the Rocky Mountains and the eastern part of the plateau region, with temperature more than 20 above the normal in the north-central districts, and the highest temperature of the month in Colorado and at stations in the Dakotas and Nebraska. By the 10th the warm wave had advanced to the Saint Lawrence Valley and northern New England, where the temperature was 10 to 20 above the normal. The evening of the 11th the temperature was more than 20 above the normal in the north-central districts. Unusually warm weather continued in those districts during the 12th, and the warm wave extended to the east Gulf coast, with the highest temperature of the month at points in eastern Washington, northern Wyoming, and South Dakota.

During the 13th and 14th warm weather prevailed east of the Rocky Mountains, and the highest temperature of the month was noted at points in the central valleys. During the 15th the warm wave reached the Atlantic coast, with temperature more than 20 above the normal from the lower lake region to Virginia, and the highest temperature of the month at points on Lake Erie. The warmest weather of the month occurred generally along the Pacific coast on the 15th and 16th. This warm wave extended to the middle and upper Missouri valleys by the 17th, and over the north part of the Lake region during the 18th, but failed to reach districts south of the Saint Lawrence Valley. During the 21st a warm wave, which had caused unusually high temperature in the north-central districts, advanced to the Ohio Valley, and extended thence to the Atlantic coast by the 22d. The temperature continued high in the Atlantic and east Gulf states during the 23d and 24th, with the highest temperature of the month at a number of stations in those districts.

A marked rise in temperature occurred in Manitoba on the 23d; this condition extended eastward; on the 24th the temperature was high east of the 95th meridian and in Texas, and by the evening of the 26th the warm wave had passed off the Atlantic coast. On the 27th a warm wave overspread the northeastern slope of the Rocky Mountains, with temperature 20 to 30 above the normal. During the 28th it extended over the central valleys, and passed off the Atlantic coast on the 29th. On this date a decided increase in temperature was noted over Montana, and this condition extended to the central valleys by the 30th. On the 31st the highest temperature of the month was reported at stations in the lower Missouri valley, and a warm wave occupied the region between the 95th meridian and the Alleghany Mountains.

PERIODS OF LOW TEMPERATURE.

The month opened with freezing weather almost to the immediate Gulf coast. This cold wave passed off the Atlantic coast during the 2d. On the 2d the temperature fell generally over the Rocky Mountain regions and on the Pacific coast, and by the 3d the cold wave had extended east of

the Rocky Mountains, with temperature 10 to 20 below the normal on the eastern slope of the Rocky Mountains, after which it lost intensity, and did not materially affect the temperature conditions of the central valleys. The temperature had continued generally below the normal over the western part of the country, and on the 5th a decided fall occurred west of the Rocky Mountains, and the temperature was 10 to 20 below the normal from the British Northwest Territory to western Texas. During the 6th the cold wave advanced to the Mississippi River, and during the 7th reached the Atlantic coast south of New England. On this date the temperature was below the normal, except in the north-central districts, and the lowest temperature of the month, 22, was noted at Abilene, Tex.

Low temperature continued over the southern part of the country during the 8th; over a great part of Texas it was more than 20 below the normal; the lowest temperature of the month was reported at El Paso and San Antonio, Tex., where the minimum fell to 8 and 26, respectively; and the minimum readings fell below 32 almost to the immediate Gulf and south Atlantic coasts. The weather continued cold in the Southern States until the 9th. The morning of the 16th the temperature was below zero in the Red River of the North Valley. During the 17th and 18th this cold wave extended over the Ohio Valley and the middle Atlantic and New England states, with temperature below freezing to the north part of the Gulf States and South Carolina, and the lowest temperature of the month occurred at points in the Lake region, the Ohio Valley, and the Atlantic coast states north of the Carolinas.

The morning of the 24th the temperature was below zero in the British Northwest Territory, and the coldest weather of the month was noted on the north Pacific coast, where the minimum temperature fell below freezing. On the 25th this cold wave extended over the entire Pacific coast and the plateau region and reached the eastern slope of the Rocky Mountains; the line of zero temperature extended from the middle plateau region to Minnesota; freezing weather occurred over the entire western half of the country, except along the immediate middle California coast; and the lowest temperature ever reported for December was reported at Yuma, Ariz., Keeler, Cal., and Montrose, Colo., where it was 25, 17, and —17, respectively. On the 26th the cold wave advanced to the Alleghany Mountains; the minimum temperature was below —20 in the Red River of the North Valley, and a reading of —27 was noted at Saint Vincent, Minn.; freezing weather occurred north of a line traced from northern Louisiana to the lower lake region; the lowest temperature of the month was recorded at points in the western central valleys and the west part of the Lake region; and at San Diego, Cal., the minimum temperature, 32, was as low as ever reported in December.

During the 27th the cold wave reached the middle and south Atlantic coasts; in New England and the Saint Lawrence Valley the temperature continued above the normal; the line of freezing weather extended to Mobile, Ala.; and the lowest temperature of the month was noted at stations in the Lake region, the lower Mississippi valley, and on the west Gulf coast. During the 28th the cold wave disappeared off the Atlantic coast. On this date the temperature fell below zero in the Red River of the North Valley, and the line of freezing weather extended over the plateau region and the eastern slope of the Rocky Mountains to Mexico. By the 29th this cold wave had extended over the Lake region, with zero temperature in the north Lake Superior region, and freezing weather to the central east Gulf states; by the 31st it passed off the Atlantic coast, with temperature below zero in the Saint Lawrence Valley, and freezing weather to Georgia.

FROST.

The first heavy frost of the season was reported as follows: 3d, New River, Ariz.; Fresno, Cal. 5th, Eureka and Red Bluff, Cal. 6th, Sacramento, Cal.; Tatoosh Island, Wash. 12th, Yuma, Ariz. 17th, Austin, Tex. 18th, Rio Grande City, Tex. 19th, Dudleyville, Ariz.

On the 5th light frost injured tender vegetation near Los Angeles, Cal. The first light frost of the season occurred at San Diego, Cal., on the 6th, causing some injury to vegetation in the mountain valleys. The cold of the 6th killed the tender growth of orange and fig trees at Peoria, Ariz. The first heavy frost of the season occurred generally in the region about Los Angeles, Cal., on the 25th. Vegetables and berries in the bottom lands were generally killed, a small percentage of the orange crop was frosted, and considerable damage was caused to young trees and nursery stock. The first heavy frost of the season occurred generally about San Diego, Cal., on the 26th. Considerable damage was caused to the orange crop, and vegetation of all kinds was badly injured. Ice one-half inch in thickness formed on shallow pools, and in Mission Valley ice formed one inch in thickness and oranges were frozen. On this date young orange trees were badly damaged by cold at Peoria, Ariz. The first light frost of the season was reported at Tampa and Tarpon Springs, Fla., on the 28th.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for December, 1891, as determined from the reports of about 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In December the monthly precipitation is usually greatest on the north Pacific coast, where it exceeds 10.00; the normal amount exceeds 8.00 along the Pacific coast north of the 38th parallel, in parts of northeastern California, and in a small area in northeastern Louisiana; and it exceeds 4.00 from the middle and east Gulf coasts to the middle Ohio valley, along the immediate Atlantic coast from North Carolina to southern New England, and over Nova Scotia and southeastern Maine. Except in parts of the northern plateau region the monthly precipitation is less than 1.00 over the greater part of the Rocky Mountain and plateau regions and thence over Kansas, Nebraska, the Dakotas, and Minnesota.

In December, 1891, the monthly precipitation was greatest on the extreme north Pacific coast, where it exceeded 20 00 at Neah Bay and Tatoosh Island, Wash.; it exceeded 10.00 along the Pacific coast north of the 40th parallel; and more than 8.00 fell along the line of the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains in California, and in an area extending over east-central Texas. Over the western part of the southern plateau region, and in parts of the upper Missouri, Saskatchewan, and middle Rio Grande valleys, the monthly precipitation was less than 0.25, and it was less than 1.00 generally on the eastern slopes of the Rocky Mountains north of the 40th parallel, over the Dakotas and Montana, in southern Texas, and over the southwest part of the Florida Peninsula.

DEPARTURES FROM NORMAL PRECIPITATION.

The areas of excess and deficiency of monthly precipitation were irregularly distributed. The precipitation was in excess of the December average on the north Pacific coast and thence southeastward to the west Gulf states, from the southeast

slope of the Rocky Mountains to the Red River of the North and Lake Superior, and in an area extending from Arkansas and Mississippi northeastward to the lower lake region and south New England, the greatest excess appearing on the Oregon and Washington coasts, where it was more than 4.00. The monthly precipitation was deficient in the central valleys of California, on the south Pacific coast, over the west and south parts of the southern plateau region, over the northern part of the country from the Dakotas to the northern plateau region, from northern Arkansas and eastern Missouri northeastward over the Ohio Valley, the south part of the Lake region, northern New York, and northern New England, and generally along the immediate middle and south Atlantic and Gulf coasts, the most marked deficiency occurring along the Atlantic coast between the 32d and 38th parallels and at Los Angeles, Cal., where it exceeded 2.00.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: middle-eastern and southeastern slopes of the Rocky Mountains, 170; Missouri Valley and north Pacific coast, 150; west Gulf states and extreme northwest, 130. In districts where the precipitation was deficient the percentage of the normal was about as follows: south Atlantic states, 44; south Pacific coast, 48; Key West, Fla., 64; northeastern slope, 70; middle plateau, 73; southern plateau, 84; east Gulf states and middle Pacific coast, 86; middle Atlantic states, 88; northern plateau, 92. In New England, the lower Rio Grande and upper Mississippi valleys, the Ohio Valley and Tennessee, and the Lake region the monthly precipitation averaged about normal.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for December for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for December, 1891; (4) the departure of the current month from the average; (5) and the extremes for December during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Dec.	(2) Length of record.	(3) Total for Dec., 1891.	(4) Departure from average.	(5) Extremes for Dec.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Lead Hill	Boone	3.47	10	1.48	−1.99	11.37	1884	1.15	1889
California.									
Sacramento	Sacramento	4.68	41	3.55	−1.13	13.41	1852	0.00	'50,'76
Connecticut.									
Middletown	Middlesex	3.77	31	5.08	+1.31	7.91	1878	1.20	1875
Florida.									
Merritts Island	Brevard	2.52	13	2.57	+0.05	8.55	1888	0.00	1889
Georgia.									
Forsyth	Monroe	4.42	17	3.60	−0.82	7.56	1887	0.79	1889
Illinois.									
Peoria	Peoria	2.38	36	2.39	+0.01	7.15	1873	0.28	1876
Riley	McHenry	2.03	40	2.16	+0.13	5.67	1876	0.28	1857
Indiana.									
Logansport	Cass	3.18	15	2.07	−1.11	5.99	1881	0.46	1890
Vevay	Switzerland	3.84	26	2.42	−1.42	7.60	1879	1.16	1888
Iowa.									
Cresco	Howard	1.32	20	3.44	+2.12	3.44	1891	0.30	1874
Monticello	Jones	2.34	36	2.09	−0.25	6.99	1856	0.65	1867
Logan	Harrison	1.37	20	2.72	+1.35	3.10	1868	0.14	1889
Kansas.									
Lawrence	Douglas	1.63	27	2.41	+0.78	4.39	1873	0.08	1889
Wellington	Sumner	0.96	12	.....	.....	3.14	1884	T.	1889
Louisiana.									
Grand Coteau	St. Landry	5.38	8	4.86	−0.52	14.43	1884	2.27	1890
Maine.									
Orono	Penobscot	3.95	21	4.76	+0.81	7.92	1878	1.50	1875
Maryland.									
Cumberland	Allegany	2.19	20	3.42	+1.23	4.50	1881	0.70	1870
Massachusetts.									
Amherst	Hampshire	3.55	56	4.88	+1.33	7.09	1839	0.96	1838
Newburyport	Essex	3.99	13	3.27	−0.72	5.80	1886	2.45	1880
Somerset	Bristol	3.48	19	3.15	−0.33	5.67	1884	0.82	1875
Michigan.									
Kalamazoo	Kalamazoo	2.90	15	1.47	−1.43	7.14	1884	1.35	1890
Thornville	Lapeer	2.45	14	2.92	+0.47	5.25	1879	0.67	1880
Minnesota.									
Minneapolis	Hennepin	1.53	24	3.46	+1.93	5.30	1873	0.33	1866
Montana.									
Fort Custer	Custer	0.90	12	0.45	−0.45	1.87	1883	0.09	1885
New Hampshire.									
Hanover	Grafton	2.56	49	2.89	+0.33	5.05	1839	0.78	1875
New Jersey.									
Moorestown	Burlington	3.13	28	4.60	+1.47	5.77	1865	0.90	1877
South Orange	Essex	3.83	21	4.70	+0.87	7.07	1878	0.91	1877
New York.									
Cooperstown	Otsego	2.63	37	4.96	+2.33	6.02	1881	0.97	1877
Palermo	Oswego	3.83	37	4.05	+0.22	7.95	1878	1.60	1874
North Carolina.									
Lenoir	Caldwell	3.70	17	4.00	+0.30	8.70	1877	0.50	1889
Ohio.									
N. Lewisburgh	Champaign	2.88	19	1.75	−1.13	5.45	1873	1.50	1882
Wauseon	Fulton	2.33	19	1.91	−0.42	4.32	1879	0.41	1874
Oregon.									
Albany	Linn	8.31	12	13.19	+4.88	14.21	1887	4.30	1888
Eola	Polk	5.73	22	11.88	+6.15	11.88	1891	0.84	1876
Pennsylvania.									
Dyberry	Wayne	2.75	25	4.17	+1.42	5.29	1890	1.20	1874
Grampian Hills	Clearfield	3.67	21	5.15	+1.48	5.15	1891	1.99	1871
Wellsborough	Tioga	4.70	12	4.01	−0.69	9.57	1881	1.27	1883
South Carolina.									
Statesburgh	Sumter	3.03	10	1.82	−1.21	5.87	1884	0.75	1889
Tennessee.									
Austin	Wilson	4.23	21	4.12	−0.11	10.20	1879	0.85	1882
Texas.									
New Ulm	Austin	4.19	18	7.27	+3.08	16.43	1875	0.37	1889
Vermont.									
Strafford	Orange	3.26	18	3.50	+0.24	5.90	1878	0.15	1875
Virginia.									
Birdsnest	Northampton	3.75	22	1.90	−1.85	6.75	1880	0.55	1889
Washington.									
Fort Townsend	Jefferson	2.62	17	5.34	+2.72	5.34	1891	1.14	1879
Wisconsin.									
Madison	Dane	1.97	19	2.24	+0.27	5.73	1884	0.45	1874

YEARS OF GREATEST PRECIPITATION FOR DECEMBER.

The greatest monthly precipitation ever reported for December was noted at Port Angeles and Port Townsend, Wash., Roseburgh and Eola, Oregon, Concordia, Kans., Cresco, Iowa, Saint Paul, Minn., and Grampian Hills, Pa., in 1891; over the greater part of the plateau region and on the south Pacific coast in 1889; at a number of stations on the north Pacific coast in 1882 and 1886; from the west Gulf states to Upper Michigan in 1884; over parts of the middle Pacific coast and on the northeastern slope of the Rocky Mountains in 1880; from the middle Ohio valley to the east Gulf coast in 1879 and 1881; in New York and Massachusetts in 1878; and along the Carolina coast in 1877.

In December, 1891, the excess above the greatest monthly precipitation previously reported for December was 1.24 at Port Angeles, Wash.; 0.24 at Port Townsend, Wash.; 2.82 at Roseburgh, Oregon; 0.38 at Eola, Oregon; 0.57 at Concordia, Kans.; 0.61 at Cresco, Iowa; 0.18 at Saint Paul, Minn.; and 0.03 at Grampian Hills, Pa.

YEARS OF LEAST PRECIPITATION FOR DECEMBER.

At Fort Assinaboine, Mont., the monthly precipitation for the current month, 0.08, was the same as the least monthly precipitation ever reported for December, noted in 1881. The least precipitation for December occurred from Iowa over Minnesota and northern North Dakota in 1890; in the Gulf States and in districts south of the Ohio Valley and Pennsylvania in 1889; in the lower lake region in 1874; and in the Lake Michigan region in 1872.

In 1889, when the monthly precipitation was the greatest on record for December over the plateau region and on the south Pacific coast, it was the least on record for the month over the southeastern part of the country.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in December, 1891:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
Oregon	14	Washington	7
California	9	Texas	1

Precipitation to equal or exceed 2.50 *in* 24 *hours.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Louisiana	18	13-14, 14, 14-15, 15, 16, 22-23, 23, 23-24.	Mississippi	4	14-15.
			Tennessee	4	22-23, 23.
			Washington	3	6-7, 7.
Texas	15	10-11, 11, 11-12, 12, 12-14, 13-14, 14.	Oregon	2	26.
			Maine	2	29-30.
			California	1	7-9, 25-26.
Alabama	7	3, 15.	Florida	1	17-18.
Arkansas	7	22, 22-23, 23, 23-24.	Michigan	1	14.
			Missouri	1	6.
Wisconsin	6	13-14, 14, 14-15.	Virginia	1	3-4.

Precipitation to equal or exceed 1.00 *in* 1 *hour.*

State.	Number of stations.	Date.	State.	Number of stations.	Date.
District of Columbia	1	24.	Mississippi	1	14.

Table of excessive precipitation, December, 1891.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Brewton		3.00	15			
Chepultepec		2.20	3			
Cordova		2.64	3			
Daphne		3.74	15			
Mobile		4.32	15			
Mount Vernon Barracks		3.59	15			
Wiggins		3.13	15			
Arkansas.						
Arkansas City		3.00	23-24			
Brinkley		3.90	23			
Devall Bluff		2.70	23			
Gaines Landing		3.27	23			
Helena (1)		2.90	23-24			
Little Rock		3.42	22-23			
Lonoke		3.50	22			
California.						
Colfax	11.04					
Crescent City L. H	11.86					
Emigrant Gap	12.90					
Eureka	10.97					
Fort Gaston	18.21	4.70	7-9			
Do		4.10	25-26			
Point Arena L. H	13.52					
Sisson	11.20					
Summit	11.90					
Trinidad L. H	10.88					
District of Columbia.						
West Washington				1.09	1 00	24
Florida.						
Saint Francis Barracks		4.00	17-18			
Louisiana.						
Abbeville		3.00	14			
Edgard		3.60	15			
Emilie		2.65	14-15			
Grand Cane		4.70	23-24			
Grand Coteau		2.78	14			
Houma		4.60	13-14			
Jackson Barracks		2.65	14-15			
Lake Charles		2.60	14			
Liberty Hill		3.20	23			
Luling		4.88	14-15			
Mandeville		2.60	16			
Minden		6.02	23			
New Orleans		2.92	14-15			
Shell Beach		2.75	14			
Shreveport		4.64	22-23			
Sugar Experimental Station		3.55	14			
Thibodeaux		3.00	14			
West End		4.55	13-14			
Maine.						
Farmington		2.65	29-30			
Kennebec Arsenal		2.60	29-30			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Michigan.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Harrisville		2.60	14			
Mississippi.						
Bay Saint Louis		3.10	14-15			
Logtown		3.20	14-15			
Meridian		2.66	14-15			
Ship Island		3.70	14-15			
Vaiden				1.30	1 00	14
Missouri.						
Conception		3.05	6			
Oregon.						
Albany (1)	13.19	2.60	26			
Astoria	15.79					
Aurora	10.52					
Bandon	14.87	2.88	26			
East Portland	14.07					
Eola	11.88					
LaFayette	13.25					
Leland	13.50					
McMinnville (1)	14.00					
Mount Angel	10.41					
Portland (Weather Bureau)	11.45					
Portland (S. P. R. R.)	10.73					
Roseburgh (Weather Bureau)	12.02					
Springfield	10.55					
West Fork	10.98					
Tennessee.						
Bethel Springs		2.87	23			
Clarksville		2.69	22-23			
Covington (1)		3.50	23			
Jackson		2.90	23			
Texas.						
Austin (3)	10.31	5.31	11-12			
Do		2.87	13-14			
Brenham		3.52	11-12			
Burnet		3.35	12			
College Station		7.78	12-14			
Columbia		2.80	14			
Cuero (2)		2.90	11			
Gallinas		3.56	11-12			
Hallettsville		5.93	11-12			
Highland		3.00	10-11			
Houston		2.53	12			
Huntsville		2.50	12			
New Braunfels		3.14	12			
New Ulm		3.81	12			
San Antonio (Weather Bureau)		2.59	11-12			
San Antonio (2)		2.54	11-12			
Venus		2.59	13-14			
Virginia.						
Avon		2.75	3-4			
Washington.						
Aberdeen	19.34	2.50	7			
Chehalis	11.32					
Fort Canby (Weather Bureau)	12.50					
Fort Canby (Post Hospital)	14.29					
Neah Bay	23.91	3.60	6-7			
Olympia	13.61					
Tacoma	10.55					
Tatoosh Island	20.08	4.21	6-7			
Wisconsin.						
Embarrass		2.90	14-15			
Green Bay		2.50	14-15			
Lincoln		4.40	14			
Medford (2)		2.65	14-15			
Peshtigo		2.90	14-15			
Shawano		2.64	13-14			

Received too late to be used in general discussion for December, 1891.

California.						
Arcata	11.38					
Boulder Creek	11.97					
Crescent City	12.56					
Felton	14.08					
Georgetown	13.74					
Grass Valley (1)	10.26					
Hydesville	11.17					
Iowa Hill	11.64					
La Grange		2.97	30			
Oakland (1)		2.73	29			
Oleta		2.75	29			
Placerville (1)	12.57					
Redding (2)	10.38	2.91	29			
San Ardo (2)		2.75	28-29			
Santa Cruz (2)		3.20	29			
Shasta Springs	11.49	2.50	26-27			
Steeles		3.73	30			
Towles	11.18					
Upper Mattole	17.31	3.30	27			
Walla Walla Creek	12.40					
Oregon.						
Albany (2)	11.11					
Brownsville	10.20					
Cascade Locks	21.50	2.50	26			
Comstock	16.25					
Corvallis (1)	11.93					
Corvallis (2)	11.40					
Eugene	10.40					
Forest Grove	14.11					

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Oregon—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Gardiner	17.60					
Hood River (near)	12.85					
Hubbard	10.54					
Langlois	18.67					
McMinnville (2)	12.02					
Newberg	11.75					
Newport	13.86					
Piedmont	10.11					
Roseburgh (S. P. R. R.)	10.77					
Sheridan	11.37					
Siskiyou	15.65					
Toledo	12.17					
Vernonia	17.44	2.84	7			
Washington.						
Lapush	15.11					

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during December, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga	0.30	4	0.37	4	0.52	4
Bismarck, N. Dak *						
Boston, Mass	0.08	30	0.14	30	0.51	30
Buffalo, N. Y	0.05	4	0.10	4	0.20	4
Cincinnati, Ohio	0.03	24	0.05	24	0.15	23, 24
Chicago, Ill	0.05	1	0.06	1	0.15	1
Cleveland, Ohio	0.03	15	0.05	15	0.15	23
Denver, Colo *						
Detroit, Mich	0.02	4, 15	0.03	4, 15	0.12	4
Dodge City, Kans	0.04	13	0.06	13	0.15	13
Duluth, Minn *						
Eastport, Me	0.11	5	0.12	5	0.22	23
Galveston, Tex *						
Indianapolis, Ind	0.18	24	0.22	24	0.27	29
Jacksonville, Fla	0.05	18	0.08	18	0.25	18
Jupiter, Fla	0.10	5	0.15	5	0.40	5
Kansas City, Mo *						
Key West, Fla	0.15	18	0.24	18	0.70	18
Marquette, Mich *						
Memphis, Tenn	0.10	23	0.20	23	0.60	23
New York, N. Y	0.10	4, 24	0.13	4, 24	0.39	24
New Orleans, La	0.15	15	0.25	15	0.75	15
Norfolk, Va	0.25	4	0.26	4	0.28	4
Philadelphia, Pa	0.08	24	0.16	24	0.47	24
Philadelphia Water Works *						
Pittsburg, Pa	0.05	15	0.10	15	0.30	15
Portland, Oregon	0.05	22	0.06	22	0.20	22
Saint Louis, Mo	0.10	3	0.15	3	0.23	3
Saint Paul, Minn *						
San Diego, Cal	0.10	30	0.10	30	0.15	30
San Francisco, Cal	0.05	3	0.12	3	0.28	3
Savannah, Ga	0.10	7	0.12	7	0.13	7
Washington, D. C	0.10	24	0.15	24	0.58	24
Wilmington, N. C	0.05	29	0.10	29	0.20	29

*Record incomplete.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for December during the last 22 years:

Excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
Washington	16	Alabama	1
California	13	Arizona	1
Oregon	10	Indiana	1
Texas	7	Kentucky	1
North Carolina	6	Massachusetts	1
Louisiana	5	Michigan	1
Florida	4	Missouri	1
Mississippi	3	Nevada	1
Arkansas	2	New Hampshire	1
Georgia	2	New Jersey	1
New York	2	Tennessee	1

Excessive monthly precipitation—Continued.

State.	No. years noted.	State.	No. years noted.
Virginia	1	Minnesota	0
Colorado	0	Montana	0
Connecticut	0	Nebraska	0
The Dakotas	0	New Mexico	0
Delaware	0	Ohio	0
District of Columbia	0	Pennsylvania	0
Idaho	0	Rhode Island	0
Illinois	0	South Carolina	0
Indian Territory	0	Utah	0
Iowa	0	Vermont	0
Kansas	0	West Virginia	0
Maine	0	Wisconsin	0
Maryland	0	Wyoming	0

Excessive daily precipitation (24 hours).

California	14	Michigan	3
Texas	12	New Jersey	3
Louisiana	11	Arizona	2
North Carolina	11	Iowa	2
Georgia	10	Missouri	2
Alabama	9	District of Columbia	2
Florida	9	Connecticut	1
Oregon	9	Delaware	1
Tennessee	9	New Hampshire	1
Mississippi	9	Utah	1
Virginia	8	Vermont	1
Indiana	7	Colorado	0
Washington	7	The Dakotas	0
Illinois	6	Idaho	0
Ohio	6	Indian Territory	0
Pennsylvania	6	Minnesota	0
South Carolina	6	Montana	0
Maryland	5	Nebraska	0
New York	5	Nevada	0
Arkansas	4	New Mexico	0
Kentucky	4	Rhode Island	0
Massachusetts	4	West Virginia	0
Kansas	3	Wisconsin	0
Maine	3	Wyoming	0

Excessive hourly precipitation.

Texas	7	The Dakotas	0
California	6	Delaware	0
Louisiana	3	District of Columbia	0
Tennessee	3	Idaho	0
Illinois	2	Indian Territory	0
Indiana	2	Iowa	0
Pennsylvania	2	Kentucky	0
Alabama	2	Maryland	0
Arkansas	2	Minnesota	0
Michigan	2	Montana	0
Mississippi	2	Nebraska	0
Georgia	1	Nevada	0
Kansas	1	New Hampshire	0
Massachusetts	1	New Jersey	0
Florida	1	New Mexico	0
Maine	1	New York	0
Missouri	1	North Carolina	0
Oregon	1	Ohio	0
Virginia	1	Rhode Island	0
Washington	1	South Carolina	0
Wisconsin	1	Utah	0
Arizona	0	Vermont	0
Colorado	0	West Virginia	0
Connecticut	0	Wyoming	0

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for December during the last 22 years:

Monthly.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
	Inches.	*Year.*		*Inches.*	*Year.*
San Andreas, Cal	51.05	1871	Grass Valley, Cal	22.69	1888
Pilarcitos, Cal	41.87	1871	Neah Bay, Wash	22.57	1887
Felton, Cal	34.95	1889	Do	22.09	1890
Mount Hamilton, Cal	33.84	1884	Vacaville, Cal	21.85	1880
Reeds Camp, Cal	32.07	1880	Colfax, Cal	21.85	1889
Laurel, Cal	31.79	1889	Pysht, Wash	21.61	1886
Emigrant Gap, Cal	31.20	1884	Fort Stevens, Oregon	21.27	1880
Neah Bay, Wash	30.70	1886	American Hill, Cal	21.22	1889
Upper Mattole, Cal	29.36	1889	Grass Valley, Cal	21.08	1889
Mount Saint Helena, Cal	28.91	1880	Iowa Hill, Cal	21.04	1889
Summit, Cal	28.88	1871	San Rafael, Cal	20.96	1884
Cisco, Cal	28.39	1871	Emigrant Gap, Cal	20.85	1889
Crescent City, Cal	26.26	1885	Los Gatos (1), Cal	20.73	1889
Tatoosh Island, Wash	25.84	1886	Crescent City, Cal	20.58	1889
Delta, Cal	25.83	1889	Dunsmuir, Cal	20.58	1889
Cisco, Cal	25.57	1889	Healdsburgh, Cal	20.42	1871
Do	25.05	1884	Point Pleasant, La	20.39	1884
Mumford Hill, Cal	24.34	1880	Santa Cruz, Cal	20.38	1889
Neah Bay, Wash	23.91	1891	Portland, Oregon	20.14	1882
Colfax, Cal	23.60	1884	Paducah, Ky	20.12	1879
Neah Bay, Wash	23.22	1880	Tatoosh Island, Wash	20.08	1891
Georgetown, Cal	22.94	1889	Cathlamet, Wash	20.00	1875

Daily (24 hours).

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
	Inches.			*Inches.*	
Point Pleasant, La.....	13.50	19, 1882	Hallettsville, Tex	5.93	11-12, 1891
Monroe, La	12.15	29-30, 1884	Mount St. Helena, Cal.	5.73	19-20, 1880
San Rafael, Cal.....	11.45	17-21, 1884	Louisville, Ill	5.70	3, 1873
Mount Ida, Ark.....	10.35	26-30, 1884	New Ulm, Tex.....	5.62	3, 1875
Mount St. Helena, Cal .	9.04	23-24, 1880	Neah Bay, Wash.....	5.45	16-17, 1887
Clarksville, Tex	8.50	29-30, 1874	Fort Barrancas, Fla...	5.43	5, 1879
Do	8.50	28-29, 1876	Merritts Island, Fla ..	5.39	17, 1888
Yaquina L. H., Oregon.	8.47	5-6, 1887	Fort Barrancas, Fla ..	5.36	3-4, 1877
Point Pleasant, La.....	8.03	28-30, 1884	Do	5.36	3-4, 1887
College Station, Tex...	7.78	12-14, 1891	Do	5.32	20, 1881
Portland, Oregon	7.66	12-13, 1882	Austin, Tex.....	5.31	11-12, 1891
Point Pleasant, La.....	7.02	8-9, 1878	Highlands, N. C.....	5.30	26, 1881
Lynchburgh, Va.....	6.74	21, 1884	Titusville, Fla.....	5.28	17, 1888
Mount St. Helena, Cal .	6.65	2-3, 1880	Trinity, Ala.....	5.20	4, 1887
Fort Gaston, Cal	6.60	24-25, 1883	Vicksburg, Miss	5.05	18-19, 1872
Micco, Fla	6.33	24, 1888	Red Bluff, Cal.....	5.04	19, 1879
Fort Meade, Fla	6.20	17, 1888	Boyds Corners, N. Y ..	5.02	11, 1878
Farmerville, La	6.15	5, 1890	Point Pleasant, La	5.01	14, 1884
Minden, La	6.02	23, 1891	Elsworth, N. C.....	5.00	1-2, 1880
Fayetteville, N. C.....	6.00	9-10, 1873	Melissa, Tex	5.00	27-28, 1877
Do	6.00	20-21, 1878			
Clarksville, Tex	6.00	31-Jan. 1, 1874-75			

One hour and less.

Station and state.	Amount.	Time.	Date.
	Inches.	*h. m.*	
New Orleans, La.....	0.30	0 05	5, 1890
Norfolk, Va.....	0.25	0 05	4, 1891
Savannah, Ga.....	0.25	0 05	8, 1890
Galveston, Tex.....	0.20	0 05	24, 1890
Clarksville, Tex	1.36	0 20	28, 1871
Galveston, Tex	1.36	0 20	28, 1871
Wellsborough, Pa.....	1.20	0 20	7, 1884
Winnebago, Ill.....	1.00	0 20	21, 1889

SNOW (in inches and tenths).

The first snow of the season was reported as follows: 1st, Flagstaff, Ariz. 2d, Carson City, Nev.; Folsom, Fort Bayard, and Olio, N. Mex.; Eola, Oregon. 3d, Portland, Oregon; Embuda and Fort Wingate, N. Mex. 4th, Keeler, Cal.; Middlesborough, Ky.; Moab, Utah. 5th, Holbrook and Oracle, Ariz.; Seattle, Wash. 7th, Chelan, Wash.; Ella, W. Va. 11th, Natural Bridge and Payson, Ariz. 12th, Calabasas, Mount Huachuca, and Strawberry, Ariz.; Red Canon and Springer, N. Mex.; Neah Bay, Wash. 13th, Bisbee, Ariz.; La Luz, Wash. 14th, Saint Johns, Ariz. 15th, Walnut Ranch, Ariz.; New Ulm, Tex. 17th, Moorestown, N. J. 18th, Waterville, Wash. 20th, Fort Grant, Ariz. 22d, Fort Bliss, Tex.; Doe Bay, Wash. 23d, Roseburgh, Oregon; Madrone, Wash. 24th, Tucson, Ariz.; Aberdeen, Wash. 25th, Albany, McMinnville, and Mount Angel, Oregon; Chehallis, Wash. 28th, Ochiltree, Tex. 30th, Gila Bend, Ariz.; Fort Canby, Wash. 31st, Fort Gaston, Cal.

In New England and the middle Atlantic states the monthly snowfall was generally very deficient. In parts of southern New England, Pennsylvania, Virginia, and West Virginia no snow fell during the month, and the snowfall generally in those districts was light and afforded no protection to grass and grain.

A severe snowstorm, with high wind, set in over North Dakota on the 2d and continued 3 days. The snow drifted heavily, and railroad communication was interrupted. At Saint Vincent, Minn., the storm began the morning of the 3d and continued until the 5th. Owing to high wind the ground was entirely free from snow in places and in others the snow drifts were 15 to 20 feet in depth. Heavy snow fell in Iowa, northern Missouri, northern Illinois, and southern Wisconsin on the 6th. A heavy snowstorm swept over the Rocky Mountain regions of Colorado and northern New Mexico on the 14th, and on the divide the snow drifted heavily. The principal snowstorm of the month over the northeastern part of the country occurred on the 15–16th, when the depth varied from 1.0 to 4.0 in northern New England. Very heavy snow fell in the mountains of Oregon, California, and Nevada the latter part of the month; telegraphic communication was interrupted, and the snow drifted badly along the line of the Central Pacific Railroad.

MONTHLY SNOWFALL.

The depth of snowfall for the month, as reported by regular and voluntary observers of the Weather Bureau, is shown on Chart V. The greatest depth reported was 119 at Summit, Cal.; 107 was noted at Sisson, Cal.; more than 90 in the mountains of Colorado; upward of 50 in the mountains of north-central New Mexico and at points in central and northeastern Nevada and northeastern Utah; more than 30 at stations in north-central Arizona, extreme Upper Michigan, southwestern Wyoming, Idaho, and eastern Oregon; and more than 10 generally in the plateau region north of the Gila and lower Colorado valleys, in eastern North Dakota, adjoining parts of southeastern South Dakota and northeastern Nebraska, in Upper Michigan, east-central New York, and at points in northern New England.

Snowfall of 10.0 or more was reported as follows, and in states and territories where the maximum depth was below that amount the station reporting the greatest amount is given: *Arizona.*—Flagstaff, 30; Natural Bridge, 19.5; Payson, 14.8; Strawberry, 14; Whipple Barracks, 13.2; Fort Bowie, 11.3. *California.*—Summit, 119; Sisson, 107; Shasta Springs and Walla Walla Creek, 88; Emigrant Gap, 77; Dunsmuir, 73; Sims, 50.5; Truckee (1), 50.2; Delta, 38.5; Bishop Creek, 35.2; Susanville, 34; Edgwood, 24; Fort Bidwell, 20.6; Yreka, 20; Redding, 12.5; Georgetown, 12.

Colorado.—Platoro, 98.8; Cumbres, 97; Stamford, 73.5; Breckenridge, 47.5; Dillon, 42.2; Watervale, 41.5; Red Cliff, 40; Climax, 38; Greenhorn, 37.5; Rico, 37; Steamboat Springs, 34; Twin Lakes, 33; Carson, 32.8; Apishapa, 30; Arboles, 27.2; Alma, 27; Como (near), 26.8; San Luis, 25.8; Pagoda (near), 25; Castle Rock, 23; East Dale, 21.5; Meeker and Paradox, 21; First View, 20.5; Kirk and Smoky Hill Mine, 20; Table Rock, 18.2; Montrose and Villa Grove, 18; Idaho Springs and Denver, 17.5; Box Elder, 17; Watkins, 16.5; Husted, 16.2; Cope, 16; Deer Trail, 15.8; Antonito, Georgetown, and Parachute, 15; Dumont, 14.8; Fruita, 14; Jefferson, 13.4; Del Norte and Moraine, 13; Ward District, 12.8; Monte Vista (1), 12.2; Byers, 12; Springfield, 11.4; Pueblo, 11.2; Abbott and Aroya, 11; Robb and Yuma, 10.5; Agate, 10.2.

Connecticut.—Falls Village, New Hartford (1 and 2), and West Simsbury, trace. *Idaho.*—Era, 41.5; Garden Valley, 41; Henrys Lake, 39; Kootenai, 36; Payette, 34.5; Fort Sherman, 30.5; American Falls, 22; Ruthburg, 21. *Illinois.*—Rockford, 8. *Indiana.*—Michigan City, 6.5. *Iowa.*—Havelock, 13; Bonaparte, 10. *Kansas.*—Oberlin, 9.5. *Kentucky.*—Richmond, 0.5. *Maine.*—Orono, 10.5. *Maryland.*—Easton, 0.3. *Massachusetts.*—Florida, 4. *Michigan.*—Atlantic, 34; Rockland, 24; Calumet, 23; Marquette, 22.1; Crystal Falls, 20; Sault de Ste. Marie, 16.8; Cheboygan, 15; Charlevoix, 11.5; Lathrop, 10.8; Alma, Harbor Springs, and Paw Paw, 10. *Minnesota.*—Saint Vincent, 18. *Mississippi.*—Fayette, 6? *Missouri.*—Platte River, 8.5. *Montana.*—Fort Keogh, 8.2. *Nebraska.*—O'Neill, 13; Thedford, 12.5; Sargeant, 11; Long Pine, 10.

Nevada.—Cranes Ranch and Elko, 54; Austin, 52.2; Halleck, 48; Virginia City, 43.2; Palisade, 42.5; Wells, 41.5; Lewers Ranch, 40.4; Stofiel, 33.5; Palmetto, 30; Genoa, 29; Beowawe, 26; Downeyville, 22; Battle Mountain, 20.8; Ely, 20.5; Eureka, 18.1; Tybo, 18; Golconda, 17.5; Winnemucca, 16.8; Pioche, 16; Carson City, 15.9; Hawthorne (2), 15.5; Hawthorne (1), 13; Belmont, 10. *New Hampshire.*—Groveton, 1. *New Jersey.*—Junction, Moorestown, Paterson, and Trenton, trace. *New Mexico.*—Chama, 51; Monero, 41; Folsom, 28.5; Dulce, 28.1; Gallinas Spring and Halls Peak, 26; Estalina Springs, 21.3; Coolidge, 17; Springer, 15.5; Santa

Fé, 15; Bloomfield, 10.3. *New York.*—Utica, 14; Arcade (1), 11.8; Turin, 11.7; Constableville, 11. *North Carolina.*—Asheville, Bakersville, Linville, Mount Airy, and Oak Ridge, trace. *North Dakota.*—Saint Thomas, 61; Saint Johns, 29; Napoleon, 17.6; Gallatin, 14; Grand Forks, 13.8; Grand Rapids, 11.3; Fort Pembina, 11.2; Milton, 10. *Ohio.*—Montpelier, 3. *Oregon.*—Leland, 17. *Pennsylvania.*—Blue Knob, 3.5. *Rhode Island.*—Kingston (1 and 2), trace. *South Dakota.*—Webster, 18.5; Parker and Sioux Falls, 12; Yankton, 10.4; Aberdeen and Tyndall, 10. *Tennessee.*—Greeneville, McMinnville, and Rugby, trace. *Texas.*—Hartley, 0.5. *Utah.*—Park City, 49; Nephi, 33.5; Ogden, 32; Grouse Creek, 31; Provo City, 29; Levan, 22.5; Salt Lake City, 21; Blue Creek and Kelton, 20; Snowville and Terrace, 17; Losee and Parowan, 15; Cisco, 14; Richfield, 12; Mount Carmel, 10.7; Fort Du Chesne, 10.6. *Vermont.*—Strafford, 7. *Washington.*—Spokane, 22.2; Chelan, 14.5; Waterville, 11.5. *West Virginia.*—Grafton and Kingwood, 1. *Wisconsin.*—Baraboo, 17.5; Bayfield, 14.1; Florence, 10.5. *Wyoming.*—Evanston, 34; Fort Yellowstone, 24.7; Camp Pilot Butte and Casper, 10.

DEPTH OF SNOW ON GROUND ON 15TH AND AT THE CLOSE OF THE MONTH.

Chart VI shows the depth of snow on the ground at the close of the month, as reported by regular and voluntary observers of the Weather Bureau.

On the 15th a depth of more than 10 was reported over eastern North Dakota, in parts of Upper Michigan, in the mountains of Colorado and New Mexico, and in an area extending from northeastern Nevada over southwestern Idaho. The greatest depth in New England was 5 to 6 in central Maine and northern New Hampshire; 3 to 5 was reported in east-central New York; no snow was reported in southern New England, southeastern New York, Pennsylvania, and the Ohio and upper Mississippi valleys; 2 to 10 was noted in northern lower Michigan; 3 to 15 in Upper Michigan; trace to 8 in upper Wisconsin; 2 in central Minnesota; 5 to 12 in eastern North Dakota; trace to 5 in Nebraska; trace to 1 in Kansas; 10 to over 20 in the mountains of Colorado and New Mexico; 4 to 6 in northeastern Arizona; 2 to 4 in Utah; 8 to 18 in southern Idaho; 2 to 13 in Nevada; 3 to 18 in northeastern California; and 3.2 at Baker City, Oregon.

At the close of the month 1 to 2 was reported in northern New England and northeastern and western New York; 0.5 in the mountains of Pennsylvania; trace to 2 in Lower Michigan; 1 to 6 in Upper Michigan; 1 to 5 in northern Wisconsin; 3 to 12 in Minnesota and eastern North Dakota; trace to 2 in northern Iowa; 3 to 14 in eastern South Dakota; trace to 5 in Nebraska and eastern and western Kansas; 20 to 30 in the mountains of Colorado and northern New Mexico; 3 to 5 in northeastern Arizona and central and west-central New Mexico; 2 to 14 in Utah; 20 to 30 in Idaho; 4 to 50 in Nevada; 1 to 45 in northeastern California; 15 at Baker City, Oregon; and 4 to 6 in central and eastern Washington.

HAIL.

Description of the more severe hailstorms of the month is given under "Local storms." Hail was reported as follows: 1st, Washington. 2d, Oregon, Utah, and Washington. 3d, Nebraska. 4th, Kentucky and Utah. 5th, Indiana, Missouri, Oregon, and Washington. 6th, Illinois, Missouri, and Ohio. 8th, Oregon, Utah, Washington, and Wisconsin. 9th, California, Utah, and Wyoming. 12th, Arizona and New Mexico. 15th, Maine, Massachusetts, and Pennsylvania. 16th, Delaware. 18th, Alabama. 19th, Arizona and New York. 21st, Indian Territory, Iowa, Nebraska, Washington, and Wisconsin. 22d, Iowa, Washington, and Wisconsin. 23d, Oregon and Texas. 24th, Massachusetts. 27th, California and Washington. 28th, Arkansas and Washington. 29th, California, Georgia, Maryland, Missouri, New Jersey, New York, North Carolina, Oregon, Virginia, and Washington. 30th, Arizona and California. 31st, California, Kansas, Missouri, New York, Ohio, Oklahoma Territory, and Texas.

SLEET.

Description of the more severe sleet storms of the month is given under "Local storms." Sleet was reported as follows: 2d, Nevada and Utah. 3d, Minnesota. 4th, Michigan, Minnesota, New York, Ohio, South Dakota, and Utah. 5th, Kansas, Missouri, and New York. 6th, Illinois, Indiana, Kansas, Michigan, Missouri, New York, and Ohio. 7th, Ohio and Pennsylvania. 8th, California and Utah. 9th, Nevada and Utah. 12th, Arizona. 13th, Nebraska and New York. 14th, Nebraska and South Dakota. 15th, Connecticut, Massachusetts, Nevada, New York, Pennsylvania, and Vermont. 16th, Maine, Massachusetts, Nevada, and Pennsylvania. 18th, Alabama, Georgia, and South Carolina. 19th, Georgia and South Carolina. 21st, Iowa, Utah, and Washington. 22d, Minnesota, Texas, and Utah. 23d, California. 25th, Iowa and Missouri. 27th, Oregon. 28th, Iowa and Nebraska. 29th, Connecticut, Maine, New Jersey, Ohio, and Washington. 30th, California, Indiana, New Mexico, Ohio, and Washington. 31st, Kansas, Michigan, Missouri, Ohio, Pennsylvania, and Texas.

WINDS.

The prevailing winds in December, 1891, are shown on Chart II by arrows flying with the wind. In New England, the middle Atlantic states, and on the northeast slope of the Rocky Mountains southwest to northwest winds were most frequently noted; in the south Atlantic and east Gulf states and over the Florida Peninsula they were generally from northeast to southeast; in the west Gulf states, the lower Rio Grande valley, the Ohio Valley and Tennessee, and on the north Pacific coast, from east to south; in the Lake region and over the northern plateau region, from southeast to southwest; in the extreme northwest and on the south Pacific coast, from west to north; in the upper Mississippi valley and on the southeast slope of the Rocky Mountains, from south to southwest; in the Missouri Valley, on the middle-eastern slope of the Rocky Mountains, and over the middle plateau region, from south to northwest; over the southern plateau region, from north to southeast; and on the middle Pacific coast, variable.

HIGH WINDS.

[In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 1st, 60, w., at Tatoosh Island, Wash.; 57, se., at Chicago, Ill. 3d, 52, s., at Cairo, Ill.; 52, e., at Tatoosh Island, Wash. 4th, 63, se., at Woods Holl, Mass.; 62, sw., at Buffalo, N. Y.; 60, w., at Block Island, R. I.; 54, se., at Harrisburg, Pa.; 54, s., at Chicago, Ill.; 51, sw., at Grand Haven, Mich. 5th, 58, se., at Woods Holl, Mass.; 54, sw., at Buffalo, N. Y.; 54, sw., at Lexington, Ky. 6th, 52, s., at Fort Canby, Wash. 7th, 98, s., at Fort Canby, Wash.; 60, s., at Tatoosh Island, Wash.; 52, sw., at Fort Assinaboine, Mont. 8th, 53, sw., at Chicago, Ill.; 51, sw., at Fort Assinaboine, Mont. 9th, 56, w., at Cheyenne, Wyo.; 52, sw., at Winnemucca, Nev.; 51, sw., at Woods Holl, Mass. 11th, 50, s., at Tatoosh Island, Wash.; 50, n., at Keeler, Cal. 12th, 60, s., at Fort Canby, Wash.; 50, sw., at Buffalo, N. Y. 14th, 60, n., at Pueblo, Colo.; 52, e., at Tatoosh Island, Wash. 16th, 59, nw., at Woods Holl, Mass.; 52, se., at Fort Canby, Wash.; 50, s., at Tatoosh Island, Wash. 17th, 51, nw., at Woods Holl, Mass. 20th, 62, w., at Tatoosh Island, Wash. 22d, 60, w., at Tatoosh Island, Wash.; 52, w., at Fort Canby, Wash. 23d, 56, w., at Tatoosh Island, Wash. 25th, 66, se., at Fort Canby, Wash.; 51, sw., at Chicago, Ill.

26th, 88, s., at Fort Canby, Wash.; 66, sw., at Buffalo, N. Y.; 58, nw., at Cheyenne, Wyo.; 52, sw., at Tatoosh Island, Wash. 27th, 60, nw., at Fort Assinaboine, Mont.; 60, se., at Fort McKinney, Wyo.; 60, sw., at Winnemucca, Nev.; 50, sw., at Lander, Wyo. 28th, 60, e., at Tatoosh Island, Wash.; 58, w., at Fort Canby, Wash.; 56, sw., at Chicago, Ill. 29th, 85, w., at Fort Canby, Wash.; 66, e., at Tatoosh Island, Wash.; 60, w., at Fort McKinney, Wyo.; 50, sw., at Chicago, Ill. 30th, 56, nw., at Hatteras, N. C.; 54, nw., at Woods Holl, Mass.; 53, nw., at New York, N. Y.; 52, s., at New London, Conn.; 52, s., at Boston, Mass. 31st, 72, se., at Fort Canby, Wash.; 55, nw., at Woods Holl, Mass.

LOCAL STORMS.

1st.—At Tatoosh Island, Wash., high southwest veering to west winds prevailed, with rain at intervals, and a heavy hailstorm of 2 minutes duration at 1.30 p. m. A second hailstorm, lasting 4 minutes, occurred 8.15 p. m. A heavy thunderstorm, with high wind, occurred at Levan, Utah.

3d-4th.—High wind and heavy snow prevailed over North Dakota and northwest Minnesota, and drifted snow interrupted railway traffic.

3d.—At Meridian, Miss., a thunder, wind, and rain storm began 1.15 p. m. and ended 10.10 p. m. The wind reached a velocity of 42 miles per hour from the southeast at 2 p. m., with an extreme velocity of 58 miles per hour, causing damage to roofs, trees, etc. High wind was general throughout Louisiana. At New Orleans a velocity of 36 miles per hour from the southwest was recorded. High wind damaged a railway bridge at Alexandria, La. At Saint Louis, Mo., heavy rain fell at intervals, and a southwest gale began at 9 p. m., and continued during the night.

4th.—High south to east winds, attaining a velocity of 30 miles per hour, prevailed at Boston, Mass. Destructive winds were reported in Vermont. Heavy gales prevailed over southern New England and Long Island Sound. Telegraph poles and trees were prostrated in the upper part of New York City. On the Hudson River a number of brick barges were capsized off Croton Point by heavy wind, and 20 men were reported drowned. At Albany, N. Y., a heavy wind and rain storm in the evening damaged trees, etc. At New Lisbon, N. Y., buildings were unroofed and trees blown down. At Malone, N. Y., a wind velocity of 65 miles per hour from the south was reported, and much damage was caused to buildings, the estimated loss being $3,500. At Buffalo, N. Y., the wind reached a velocity of 62 miles per hour from the southwest at 10.33 p. m., and heavy rain and some sleet fell in the evening.

High southerly winds prevailed along the New Jersey coast, causing damage to seaside property and buildings in course of construction. Considerable damage was caused by high wind in the western part of New Brunswick, N. J. High winds wrecked a number of buildings in the Cumberland Valley, Pa., the estimated damage being $20,000 to $30,000. The storm struck Harrisburg, Pa., at 11.45 a. m., and the wind reached a velocity of 54 miles per hour from the southeast at that place, without causing material damage. At Middletown, Md., a violent wind and rain storm from the south began 12.35 p. m., damaging buildings, blowing down trees, and flooding small streams. Damage to property was reported at Taneytown, Md. A heavy squall from the southwest, lasting 9 minutes, passed over Savannah, Ga., at 8.04 a. m., with wind velocity 36 miles per hour, and a temperature fall of 10°.

At Detroit, Mich., a southeast gale set in at 8.48 p. m., 3d, and continued during the 4th, with wind shifting to southwest and reaching a velocity of 42 miles per hour at 4.30 p. m. Damage was caused at points throughout the state, and a number of vessels were wrecked. At Muskegon, Mich., a large building was unroofed, involving a loss of about $10,000, and a number of other buildings were injured. At Grand Haven, Mich., the wind reached a velocity of 51 miles per hour from the southwest at night, and rain was followed by sleet and snow; the draw of the Spring Lake bridge was blown down and 3 cribs at the end of the south pier were moved from their position, involving a loss of several thousand dollars. A southwest gale, with snow, prevailed at Saint Paul, Minn., and the walls of a building recently burned were blown down, killing 8 men. Damage was caused to roofs at Sioux City, Iowa, by violent gusts of wind which attended a southwest gale in the early morning.

6th.—A heavy snowstorm prevailed over northern Iowa, northern Illinois, and southern Wisconsin, interrupting traffic and delaying railway trains.

7th.—At Kitty Hawk, N. C., the wind shifted to northwest at 6.50 p. m., and attained a velocity of 48 miles per hour. A whirlwind was reported at Kill Devil Hill Life Saving Station, which carried away several outhouses. An unusually heavy and destructive windstorm prevailed along the north Pacific coast. At Tatoosh Island, Wash., the wind reached a velocity of 60 miles per hour from the south, and heavy rain fell in the early morning. The storm was reported the severest ever experienced at Port Angeles, Wash.; a large number of trees were uprooted; great damage was caused to buildings, about 40 being crushed in; many persons were injured; and the Government telegraph line to Tatoosh Island was demolished. At Olympia, Wash., high south wind prevailed, with rain in the afternoon, and passenger steamers remained in port. At Fort Canby, Wash., high south winds, reaching a velocity of 98 miles per hour, with heavy rain, continued during the day, causing damage to buildings.

At Walla Walla, Wash., a storm from the south began 11.20 a. m. and ended 9.50 p. m., with a maximum velocity of 42 miles per hour, and an extreme velocity of 55 miles per hour at 6.53 p. m.; a large barn was unroofed, trees were blown down, and other damage caused. At Portland, Oregon, brisk to high winds prevailed, reaching a velocity of 44 miles per hour, and from noon to 6 p. m. the wind velocity was 32 miles per hour; the roof of the instrument shelter at the Weather Bureau station was blown off, trees were prostrated, and other damage of a minor character was reported. At Astoria, Oregon, a southwest gale, with heavy rain, continued from 7 a. m. until 6 p. m., causing considerable damage in and about the city; houses were unroofed and overturned; vessels in the harbor dragged their anchors; and telegraph lines were prostrated. At Eureka, Cal., a heavy gale began the afternoon of the 7th, with rain at intervals from 3.10 to 7.30 p. m., and continued during the 8th; all vessels remained in port.

8th.—At Carson City, Nev., a southwest gale, with light snow, prevailed, the wind reaching a velocity of 58 miles per hour; from 8 p. m., 7th, to 8 a. m., 8th, the temperature rose 19°.5. At Port Huron, Mich., a windstorm prevailed during the afternoon and evening, a velocity of 47 miles per hour being reached at 3 p. m.

9th.—Heavy west winds, reaching a velocity of 56 miles per hour, damaged buildings at Cheyenne, Wyo.

11th.—At Los Angeles, Cal., fresh to high northerly winds prevailed in the early morning, reaching a velocity of 26 miles per hour from the northwest at 4.15 a. m. During the morning the wind increased in force from the north, with a maximum velocity of 28 miles per hour at 10.25 a. m. In the San Bernardino, San Gabriel, and San Fernando valleys the storm was more severe, the wind demolishing a number of houses and causing great damage to orange groves. At Pasadena and Glendale a number of houses were blown down, and telegraph lines running east and north from Los Angeles were prostrated.

14th.—A heavy wind and snow storm swept over the Rocky Mountain region from central Colorado over northern New Mexico. At Pueblo, Colo., a severe "norther" began shortly after midnight and the wind velocity varied from 40 to 60 miles per hour until noon, with snow from 3 a. m. to 11 a. m.; buildings were damaged to the extent of about $6,000. In northern New Mexico drifted snow interfered with railroad traffic.

16th.—A heavy gale prevailed along the New Jersey and southern New England coasts. During the evening a snowstorm set in over east-central New York.

19th.—At San Francisco, Cal., the pressure decreased rapidly until noon, with light rain at intervals. About 9.30 a. m. (local time) a house was demolished, and a street car was overturned by a whirl or strong gust of wind in the western part of the city; the wind velocity at the Weather Bureau office was 27 miles per hour from the west at that hour, the highest noted for the day.

20th.—High south to west gales prevailed on the Washington coast and in the Straits, and a general snowstorm was reported throughout southern British Columbia.

21st.—A wind and snow storm extended over eastern Washington. A heavy wind and rain storm set in at night over northwestern Washington. At Salt Lake City, Utah, a snowstorm, with heavy gusts of wind, which commenced the morning of the 20th ended 11.45 a. m. Severe storms occurred in South Dakota, Nebraska, and Iowa; snow falling in South Dakota; rain, sleet, and snow in Nebraska; and thunderstorms, with rain and sleet, in Iowa.

22d.—Heavy westerly winds continued on the coasts of northwest Washington. At Newport, Oregon, windows were reported broken by concussion during an unusually violent thunderstorm.

23d.—High westerly winds continued on the Washington coast. At Upper Lake, Cal., a heavy windstorm from the northwest occurred in the early morning. A severe storm prevailed over Louisiana, Mississippi, and Alabama. In northern Louisiana the rainfall measured 4.00 to 6.00. At Meridian, Miss., rain fell in the evening; the wind veered from southeast to south, with a maximum velocity of 38 miles per hour, and an extreme velocity of 60 miles at 8.26 p. m., causing damage to fences and trees. At Mobile, Ala., a windstorm began suddenly at 7.50 p. m., with light rain; the electric-light tower in Washington square was blown down.

24th.—At Chattanooga, Tenn., a heavy wind and rain storm occurred in the early morning; the wind reached a velocity of 36 miles per hour from the south, causing damage to roofs, trees, etc. A general and heavy snowstorm prevailed over the Dakotas. At Cheyenne, Wyo., snow began in the early morning, with high north wind.

25th.—A heavy snowstorm prevailed over Nebraska and western Iowa, interrupting traffic. A northwest gale, with snow, was reported at Duluth, Minn., in the evening. Snow was also reported in Oregon and Washington east of the Cascade Mountains.

26th.—Heavy gales occurred on the coast of Washington. Heavy snow and wind storms prevailed in eastern Oregon and northeastern California. At Eureka, Cal., a severe rainstorm set in during the evening, and rain and high winds continued at that place until the 31st. At Cheyenne, Wyo., heavy northwest winds were destructive to buildings, etc. At Buffalo, N. Y., a severe gale began 11.35 a. m.; the wind reached a velocity of 66 miles per hour at 1.56 p. m.; rain fell in the morning, and snow flurries occurred in the afternoon.

27th.—At Salt Lake City, Utah, the wind increased in force in the evening, with sleet, changing to heavy snow; snow fell throughout the night, delaying trains, etc. At Lander, Wyo., the wind shifted to southwest in the morning and reached a velocity of 50 miles per hour. At Fort Assinaboine, Mont., high southwest wind and snow began about noon. The lowest barometer on record at that station, 29.04 (reduced), was noted at the 8 a. m. observation.

29th.—Severe storms prevailed on the north Pacific coast, over parts of the middle Rocky Mountain region, in Tennessee, and along the Atlantic coast from the Carolinas northward. At Olympia, Wash., rain, with high southwest winds, continued throughout the day. At Aberdeen, Wash., the wind reached a velocity of 40 miles per hour from the southwest in the afternoon, causing unusually high tide. At Walla Walla, Wash., the wind reached a velocity of 45 miles per hour from the southwest, and an extreme velocity of 60 miles. High wind, with light rain, prevailed at Roseburgh, Oregon. At Astoria, Oregon, an unusually violent southwest gale, with light rain, began the night of the 28th and continued during the early morning of the 29th, wrecking buildings, uprooting trees, etc. The pressure fell from 29.74 at 4.40 p. m., 28th, to 28.92 at 4.30 a. m., 29th.

At McMinnville, Oregon, a furious gale during the early morning caused considerable damage of a minor character. At Salinas, Cal., the rainfall during the 28th and 29th was exceptionally heavy. Heavy drifting snow interrupted railroad traffic in the mountains of Colorado and northern New Mexico. During a heavy thunderstorm at Nunnelly, Tenn., the wind reached a velocity of 40 miles per hour from the south. At Raleigh, N. C., a thunder and rain storm advanced from the southwest about 6.40 p. m., with heavy thunder and lightning for 20 minutes. Lightning struck a barn on the North Carolina Experiment Station farm, one mile west of Raleigh; the barn and adjoining stables were burned and 2 mules were killed. Heavy rain and thunder storms occurred in eastern Virginia in the evening, and high winds prevailed along the New Jersey and New England coasts.

30th.—A heavy wind and rain storm prevailed over New England and along the Atlantic coast to Hatteras, N. C., causing considerable damage. A severe wind and snow storm occurred over northern Utah.

31st.—At Abilene, Tex., a thunderstorm advanced rapidly from the west at 6.30 p. m., with rain, hail, and high wind reaching a velocity of 48 miles per hour. Rain and hail continued 10 minutes, the hailstones being small, and the temperature fell 20° during the storm. At Gallinas, Tex., a heavy black cloud and frequent flashes of lightning were observed in the west and northwest about 8 p. m. As the storm approached brisk south winds were succeeded by strong gusts from the northwest, with light rolling thunder. At Gainesville, Tex., buildings were damaged by high winds. A severe storm was reported at Marksville, La., in the evening. A thunderstorm occurred at Atchison, Kans. High winds prevailed along the New England coast. Heavy southerly winds were reported on the Washington coast.

INLAND NAVIGATION.

ICE IN RIVERS AND HARBORS.

The Penobscot River was reported closed by ice at Bangor, Me., on the 18th.

The Connecticut River was frozen over for the first time this season at Middletown, Conn., on the 18th.

Large quantities of ice were reported in the Hudson River at Albany, N. Y., on the 17th, and on the 20th ice 2 to 3 inches in thickness was reported between Albany and Hudson, N. Y.

Floating ice was reported in the Detroit River on the 18th, 19th, 21st, and 30th.

The Grand River was closed by ice at Lansing, Mich, on the 7th, open on the 14th, closed on the 18th, and open on the 22d.

A rapid rise in the Black River caused the ice to break up at Black River Falls, Wis.; timber and piling of a railroad bridge in course of construction were carried away and other damage caused.

Mississippi River.—On the 5th the ice on Lake Pepin was 8 inches in thickness, and teams were crossing. At Red Wing, Minn., the ice broke up during the early morning of the 14th;

the river was frozen on the 17th; ice broke up on the 21st; river frozen over on the 26th. At La Crosse, Wis., the river was rising and the ice disappearing on the 14th; 15th, river almost clear of ice; 23d, river clear of ice. On the 14th the river was clear of ice at Dubuque, Iowa, and was frozen on the 26th. At Davenport, Iowa, the ice ran out on the 4th; 7–8th, river full of floating ice; 9th, river clear of ice; 12–13th, river full of floating ice; 25th to 28th, river full of floating ice.

Missouri River.—At Pierre, S. Dak., the river was frozen over until the 20th, when open water appeared in places. At Yankton, S. Dak., the river was frozen over on the 25th. At Sioux City, Iowa, small quantities of ice were running on the 11th; ice was also running on the 12th, 14th, and 15th. At Leavenworth, Kans., floating ice was noted on the 7th, 8th, 26th, and 27th.

CLOSING OF NAVIGATION.

Navigation on the Erie Canal at Albany, N. Y., closed on the 5th. At Oswego, N. Y., navigation on Lake Ontario closed on the 28th; the harbor was open but no freight was offered. At Buffalo, N. Y., navigation was practically closed on the 14th. At Cleveland, Ohio, marine insurance expired on the 5th; many vessels continued their trips, however. Navigation closed at Toledo, Ohio, on the 9th. A report from Port Huron, Mich., states that the Fort Gratiot Light was discontinued for the season on the 12th; that ice was floating in the Black River from the 17th to 21st; and that navigation at that port was closed for the season on the 22d. Navigation was reported closed for the season at Sault de Ste. Marie, Mich., on the 8th; at Marquette, Mich., on the 2d; at Manistee, Mich., on the 17th; at Milwaukee, Wis., for all regular steamers, on the 10th; and at Duluth, Minn., on the 7th.

Heights of rivers above low-water mark, December, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	26	7.9	3	—1.6	9.5
Arkansas River.						
Fort Smith, Ark	22.0	24	3.6	2,3	1.5	2.1
Little Rock, Ark	23.0	26	7.9	2	3.8	4.1
Missouri River.						
Fort Buford, N. Dak *	.....	.....	.....	.....	.....	.....
Sioux City, Iowa *	18.7	.....	.....	.....	.....	.....
Kansas City, Mo	21.0	27	6.4	12	4.0	2.4
Mississippi River.						
Saint Paul, Minn *	14.0	.....	.....	.....	.....	.....
La Crosse, Wis *	11.8	.....	.....	.....	.....	.....
Dubuque, Iowa *	16.0	.....	.....	.....	.....	.....
Davenport, Iowa †	15.0	28	3.3	5	0.1	3.2
Keokuk, Iowa	14.0	30, 31	2.0	8	—1.4	3.4
Saint Louis, Mo	30.0	26	5.7	6	2.3	3.4
Cairo, Ill	40.0	31	21.3	23	11.8	9.5
Memphis, Tenn	33.0	31	14.6	12, 13, 25	9.3	5.3
Vicksburg, Miss	41.0	31	15.5	1	4.8	10.7
New Orleans, La	13.0	17	4.2	1	2.3	1.9
Ohio River.						
Parkersburgh, W. Va	38.0	29	17.8	14	8.0	9.8
Cincinnati, Ohio	45.0	31	27.2	21	12.4	14.8
Louisville, Ky	24.0	31	11.1	22	6.5	4.6
Cumberland River.						
Nashville, Tenn	40.0	31	21.0	22, 23	3.7	17.3
Tennessee River.						
Chattanooga, Tenn	33.0	10	10.9	4	2.8	8.1
Knoxville, Tenn	29.0	9	7.0	3	1.3	5.7
Monongahela River.						
Pittsburg, Pa	29.0	6	15.8	16	3.8	12.0
Savannah River.						
Augusta, Ga	32.0	6	11.2	3	7.2	4.0
Willamette River.						
Portland, Oregon	15.0	30	12.8	1	4.6	8.2
Susquehanna River.						
Harrisburg, Pa	17.0	7	9.6	4	3.6	6.0
Alabama River.						
Montgomery, Ala	48.0	9	8.2	3	1.1	7.1

*Frozen. † For 27 days.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 3d, Montevideo, Minn. 6th, Alta and Cresco, Iowa; Cornish, Me.; in Michigan; Pine River, Minn.; Grand Rapids, N. Dak.; Webster, S. Dak.; Medford, Wis. 7th, Riley, Ill.; Alta and Delaware, Iowa; Cornish, Me.; Concord and Newburyport, Mass.; Fort Assinaboine and Miles City, Mont.; Bismarck and Fort Buford, N. Dak.; Castlewood and Kimball, S. Dak. 9th, Orono and State College, Me.; Fort Assinaboine, Mont.; Webster, S. Dak. 11th, Fort Assinaboine, Mont. 12th, Cornish, Me. 19th, Woodbridge, S. Dak. 20th, Fort Buford, N. Dak. 22d, in Arkansas. 27th, Alpena, Mich.; Selins Grove, Pa. 28th, Selins Grove, Pa. 29th, in Michigan; Webster, S. Dak.; Barron and Embarrass, Wis. 30th, in Arkansas. 31st, University, Miss.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 14, on the 29th; in 11 on the 31st; in 10 on the 3d; in 9 on the 2d; in 8 on the 6th; in 7 on the 24th; in 6 on the 21st; in 5 on the 4th, 14th, and 23d; in 4 on the 7th, 22d, 28th, and 30th; in 3 on the 1st, 4th, and 13th; in 2 on the 25th; and in 1 on the 8th, 10th to 12th, 15th, 19th, 20th, and 27th. No thunderstorms were reported on the 9th, 16th to 18th, and 26th.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 13, in Texas; on 10 in Iowa; on 8 in Kansas and Missouri; on 7 in Mississippi; on 6 in Nebraska and Wisconsin; on 4 in Illinois, Indian Territory, and Virginia; on 3 in Alabama, Arkansas, Georgia, Indiana, Louisiana, and Pennsylvania; on 2 in Delaware, Maryland, Michigan, Minnesota, New Jersey, North Dakota, and West Virginia; and on 1 in Florida, Kentucky, New York, North Carolina, Ohio, and South Carolina.

West of the Rocky Mountains thunderstorms were reported in New Mexico on the 12th; in Oregon on the 2d, 8th, 16th, 22d, and 24th; in Utah on the 1st; and in Washington on the 1st, 7th, and 8th. In states and territories other than those named no thunderstorms were reported.

MISCELLANEOUS PHENOMENA.

DROUGHT.

At Manchester, N. H., the heavy rains of the last 9 days of the month broke the drought which had prevailed in that region since September, and enabled mills and factories to resume operations with full water power. Although abundant rains fell generally over New York, streams and wells in the northern part of the state were very low at the close of the month. During the first half of the month the drought was very severe about Charleston, S. C., and in the interior of the state water was very scarce, and cotton and other products were injured. The rains of the middle part of the month were reported of great benefit to farmers in the region about Red Wing, Minn.; the fall had been very dry, a large number of wells had failed, and water for stock had to be hauled from the rivers and streams. The drought at San Antonio, Tex., was reported broken on the 12th. Heavy rain at Tucson, Ariz., on the 24th broke a drought that had continued about 3 months. A report from San Diego, Cal., dated the 11th, stated that rain was badly needed, and that the ground was too hard and dry to plow. The drought in that section was broken by rain the latter part of the month.

VERIFICATIONS.

[Verifications made by Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Room.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for November, 1891, were made by 1st Lieutenant W. A. Glassford, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 1st Lieutenant John P. Finley, 15th Infantry, from 1st to 5th, inclusive, and by Mr. R. E. Kerkam, Chief of Division, Weather Bureau, from 6th to 30th, inclusive.

Percentages of forecasts verified, November, 1891.

State.	Weather.	Temperature.	Weather and temperature combined.	State.	Weather.	Temperature.	Weather and temperature combined.
Maine	90.7	84.7	88.3	Arkansas	81.7	89.0	84.6
New Hampshire	92.3	82.7	88.5	Tennessee	91.0	82.0	87.4
Vermont	92.7	86.0	90.0	Kentucky	90.3	78.7	85.7
Massachusetts	92.3	80.3	87.5	Ohio	88.0	81.3	85.3
Rhode Island	93.7	78.0	87.4	West Virginia	88.0	77.7	83.9
Connecticut	91.7	77.0	85.8	Indiana	88.7	78.0	84.4
Eastern New York	89.7	87.0	88.6	Illinois	87.3	76.0	82.8
Western New York	91.0	84.3	88.3	Lower Michigan	94.0	87.7	91.5
Eastern Pennsylvania	91.7	88.0	90.2	Upper Michigan	86.0	80.3	83.7
Western Pennsylvania	89.0	81.0	85.8	Wisconsin	91.0	85.3	88.7
New Jersey	88.7	94.0	90.8	Minnesota	83.0	78.7	81.3
Delaware	88.7	88.3	88.5	Iowa	83.3	80.0	82.0
Maryland	85.7	85.7	85.7	Kansas	87.0	79.0	83.8
District of Columbia	86.0	83.3	84.9	Nebraska	85.3	76.3	81.7
Virginia	88.3	87.3	87.9	Missouri	82.7	79.7	81.5
North Carolina	89.7	85.7	88.1	Colorado	93.0	75.3	85.9
South Carolina	88.7	81.7	85.9	North Dakota	84.7	64.7	76.7
Georgia	89.0	79.7	85.3	South Dakota	83.7	71.7	78.9
Eastern Florida	88.0	81.0	85.2	Northern California	97.3	76.7	89.1
Western Florida	89.3	80.7	85.9	Southern California	99.3	77.0	90.4
Alabama	90.3	89.7	90.1	Oregon	85.3	79.0	82.8
Mississippi	88.3	85.7	87.3	Washington	87.0	80.7	84.5
Louisiana	85.7	78.3	82.7				
Texas	91.7	81.3	87.5	Monthly percentage	88.6	81.7	85.8

In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. The forecasts of temperature in districts east of the Rocky Mountains for November, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE.

Appreciating the great importance that long-time predictions possess for the general public, the Chief of the Weather Bureau has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 943; temperature, 499. Percentages of verifications: weather, 81.9; temperature, 71.7; weather and temperature combined, 79.2.

Percentages of verifications of forecasts made for third day in advance. Number of predictions made: weather, 23; temperature, 19. Percentages of verifications: weather, 83.5; temperature, 94.7; weather and temperature combined, 87.5.

WIND SIGNALS FOR NOVEMBER, 1891.

Statement showing percentages of justifications of wind signals for the month of November, 1891.

Wind signals—(Ordered by 1st Lieutenant W. A. Glassford.)—Total number of signals ordered, 187; justified as to velocity, wholly, 131, partly, 7; justified as to direction, 171. Of the signals ordered, 162 were cautionary, of which 113 were justified; and 25 were storm signals, of which 18 were wholly, and 7 partly justified; 64 signals were ordered for easterly winds, of which 50 were justified, and 123 were ordered for westerly winds, of which 121 were justified. Number of winds without signals, 25. Number of signals ordered late, 28. Percentage of justifications, 71.4.

COLD-WAVE SIGNALS FOR NOVEMBER, 1891.

Cold-ware signals.—(Ordered by 1st Lieutenant W. A. Glassford.)—Number of signals ordered, 179, of which 141 were justified. Number of severe cold-waves without signals, 52. Percentage of justifications, 68.8.

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for December, 1891, were made by Major H. H. C. Dunwoody, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by Mr. R. E. Kerkam, Chief of Division, Weather Bureau.

Percentages of forecasts verified, December, 1891.

State.	Weather.	Temperature.	Weather and temperature combined.	State.	Weather.	Temperature.	Weather and temperature combined.
Maine	88.4	87.1	87.9	Arkansas	92.9	89.7	91.6
New Hampshire	85.8	86.8	86.2	Tennessee	92.3	82.9	88.5
Vermont	86.1	91.9	88.4	Kentucky	91.3	83.2	88.1
Massachusetts	87.7	90.6	88.9	Ohio	88.7	85.2	87.3
Rhode Island	89.0	94.5	91.2	West Virginia	92.3	89.7	91.3
Connecticut	87.7	87.7	87.7	Indiana	92.9	91.9	92.5
Eastern New York	86.8	91.9	88.8	Illinois	88.1	85.2	86.9
Western New York	88.4	90.0	89.0	Lower Michigan	88.4	91.3	89.6
Eastern Pennsylvania	89.4	83.5	87.0	Upper Michigan	91.6	78.1	86.2
Western Pennsylvania	83.9	93.5	87.7	Wisconsin	89.4	85.8	88.0
New Jersey	90.3	86.8	88.9	Minnesota	93.5	91.9	92.9
Delaware	88.7	85.5	87.4	Iowa	89.0	87.1	88.2
Maryland	88.1	86.5	87.5	Kansas	86.1	75.2	81.7
District of Columbia	88.4	85.5	87.2	Nebraska	91.6	77.4	85.9
Virginia	89.4	89.4	89.4	Missouri	91.0	77.4	85.6
North Carolina	92.3	87.7	90.5	Colorado	86.8	81.0	84.5
South Carolina	87.7	88.1	87.9	North Dakota	84.8	86.8	85.6
Georgia	91.6	81.9	87.7	South Dakota	90.6	83.5	87.8
Eastern Florida	87.7	91.0	89.0	Northern California	85.7	75.7	81.7
Western Florida	85.2	94.5	88.9	Southern California	92.7	81.0	88.0
Alabama	90.0	93.2	91.3	Oregon	76.0	84.0	79.2
Mississippi	87.4	91.6	89.1	Washington	82.7	88.0	84.8
Louisiana	89.0	91.0	89.8				
Texas	93.9	91.0	92.7	Monthly percentage	89.1	87.3	88.4

FORECASTS FOR 48 HOURS IN ADVANCE.

Percentages of verifications of forecasts for second day in advance in December, 1891. Number of predictions made: weather, 346; temperature, 199. Percentages of verifications: weather, 87.8; temperature, 76.3; weather and temperature combined, 84.6.

WIND SIGNALS FOR DECEMBER, 1891.

Statement showing percentages of justifications of wind signals for December, 1891.

Wind Signals.—(Ordered by Major H. H. C. Dunwoody).—Total number of signals ordered, 96; justified as to velocity, wholly, 74, partly, 9; justified as to direction, 92. Of the signals ordered, 73 were cautionary, of which 56 were wholly and 8 partly justified, and 23 were storm signals, of which 18 were wholly, and 1 partly justified. 30 signals were ordered for easterly winds, of which 28 were justified, and 66 signals were ordered for westerly winds, of which 64 were justified. Number of high winds without signals, 17. Number of signals ordered late, 16. Percentage of justification, 76.9.

COLD-WAVE SIGNALS FOR DECEMBER, 1891.

(Ordered by Major H. H. C. Dunwoody.)

Two hundred and thirty cold-wave signals were ordered, of which 170 were justified. Number of cold waves without signals, 24. Percentage of justifications, 70.2.

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for December, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—The mean was 2.2 above the normal; maximum, 86, at Daphne, 30th; minimum, 12, at Mountain Home, 26th; greatest monthly range, 67, at Daphne; least monthly range, 31, at Double Springs.

Precipitation.—The average was 0.24 above the normal; greatest monthly, 9.03, at Carrollton; least monthly, 2.28, at Bermuda.

Wind.—Prevailing direction, northeast—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARIZONA.

The month was unusually cold, many stations reporting the coldest December experienced in 10 to 15 years.

Temperature.—Maximum, 77, at Yuma and Tucson, 1st, and at Rancho del Pueblo, 8th; minimum, —18, at Flagstaff, 26th; greatest monthly range, 86, at Flagstaff; least monthly range, 32, at Gila Bend.

Precipitation.—Heavy snow was reported from many stations in the northern part of the territory; greatest monthly precipitation, 1.97, at Natural Bridge; least monthly, 0.00, at Buckeye and Navajo Springs.

Wind.—Prevailing direction, southwest.—*J. C. Hayden, Observer, Weather Bureau, Tucson, director.*

ARKANSAS.

Temperature.—The mean was 3.6 above the normal; maximum, 72, at Camden, 5th; minimum, 13, at Mount Nebo, 26th; greatest monthly range, 53, at Hot Springs and Stuttgart; least monthly range, 38, at Newport.

Precipitation.—The average was 0.33 above the normal; greatest monthly, 7.50, at Lonoke; least monthly, 1.48, at Keesees Ferry.

Wind.—Prevailing direction, south.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

CALIFORNIA.

Temperature.—The mean was 3.8 below the normal; maximum, 86, at Winchester, 14th and 16th; minimum, 0 (zero), at Susanville, 25th; greatest monthly range, 68, at Winchester; least monthly range, 29, at Los Gatos.

Wind.—Prevailing direction, northwest.—*J. A. Barwick, Observer, Weather Bureau, Sacramento, director.*

COLORADO.

Temperature.—The mean was 4.0 below the normal; maximum, 72, at Las Animas, 10th; minimum, —26, at Steamboat Springs, 6th, at Climax, 25th, and at San Luis, 26th; greatest monthly range, 82, at Husted; least monthly range, 53, at Georgetown.

Precipitation.—About 3 times the usual December amount was recorded; greatest monthly, 9.70, at Cumbres; least monthly, 0.09, at Sedgwick..—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

FLORIDA.

Temperature.—Maximum, 89, at Archer, 6th; minimum, 30, at Tallahassee, 1st; greatest monthly range, 59, at Archer; least monthly range, 21, at Key West.

Precipitation.—Greatest monthly, 4.50, at De Land; least monthly, 0.30, at Homeland.

Wind.—Prevailing direction, northeast.—*E. R. Demain, Observer, Weather Bureau, Jacksonville, director.*

GEORGIA.

Temperature.—The mean was from 1.0 to 2.0 above the normal; maximum, 79, at Thomasville, 3d, at Quitman, 5th, and at Millen, 7th; minimum, 15, at Fort Gaines, 1st; greatest monthly range, 63, at Millen; least monthly range, 39, at Toccoa.

Precipitation.—Greatest monthly, 6.65, at Diamond; least monthly, 0.83, at Hepzibah.

Wind.—Prevailing direction, east.—*Park Morrill, Observer, Weather Bureau, Atlanta, director.*

ILLINOIS.

Temperature.—The mean was 8.9 above the normal of the last 16 years; maximum, 70, at Mascoutah, 14th; minimum, —2, at Hennepin, 1st.

Precipitation.—The average was 0.57 below the normal; greatest monthly, 5.52, at New Haven; least monthly, 0.87, at Griggsville and Jerseyville.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—The mean was 6.7 above the normal; maximum, 70, at Logansport, 15th; minimum, 8, at Marion, 26th; greatest monthly range, 56, at La Fayette; least monthly range, 40, at Huntingburgh.

Precipitation.—The average was 0.18 below the normal; greatest monthly, 4.57, at De Gonia Springs; least monthly, 1.17, at Hammond.

Wind.—Prevailing direction, southeast.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

Temperature.—The mean was 7.5 above the normal; maximum, 72, at Glenwood, 31st; minimum, —14, at Larrabee, 26th; greatest monthly range, 74, at Glenwood; least monthly range, 49, at Independence.

Precipitation.—The average was 0.50 above the normal; greatest monthly, 4.50, at Blakeville; least monthly, 1.21, at Glenwood.

Wind.—Prevailing direction, south.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

The month was one of the warmest on record, and the precipitation was unusually heavy.

Temperature.—The mean was 5.2 above the normal; maximum, 81, at Shields, 10th; minimum, —7, at Lakin, 26th; greatest monthly range, 80, at Shields; least monthly range, 51, at Fort Scott and Grenola.

Precipitation.—The average was 0.54 above the normal; greatest monthly, 3.49, at Elco; least monthly, 0.01, at McPherson.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was 4.0 above the normal; maximum, 70, at Franklin, 12th; minimum, 15, at Harrodsburgh, 19th, and at Pellville, 1st; greatest monthly range, 52, at Harrodsburgh; least monthly range, 42, at Earlington and South Fork.

Precipitation.—The average was slightly in excess of the normal; greatest monthly, 5.60, at Canton; least monthly, 2.82, at Lexington.

Wind.—Prevailing direction, south.—*Frank Burke, Observer, Weather Bureau, Louisville, director.*

LOUISIANA.

Temperature.—The mean was 2.0 above the normal; maximum, 80, at Abbeville, 12th; minimum, 16, at Winnsborough, 8th, 9th, and 25th; greatest monthly range, 62, at Winnsborough; least monthly range, 31, at Port Eads.

Precipitation.—The average was 0.43 below the normal; greatest monthly, 8.27, at Minden; least monthly, 1.41, at Delhi.

Wind.—Prevailing directions, southeast and northeast.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 68, at Barren Creek Springs, 23d and 24th; minimum, 10, at Darlington, 18th; greatest monthly range, 57, at Barren Creek Springs; least monthly range, 43, at Jewell.

Precipitation.—Greatest monthly, 3.92, at Fallston; least monthly, 2.02, at Darlington.

Wind.—Prevailing direction, northwest.—*Dr. William B. Clark, Johns Hopkins University, Baltimore, director; Prof. Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—Maximum, 61, at Bronson, 15th; minimum, —8, at Crystal Falls, 27th; greatest monthly range, 59, at Crystal Falls; least monthly range, 32, at Charlevoix.

Precipitation.—Greatest monthly, 4.63, at Fremont; least monthly, 0.60, at Hayes.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Observer, Weather Bureau, Detroit, director.*

MINNESOTA.

Temperature.—The mean was above the normal; maximum, 57, at Kinbrae, 12th; minimum, —27, at Saint Vincent, 28th; greatest monthly range, 73, at Saint Vincent; least monthly range, 55, at Minneapolis.

Precipitation.—The average was above the normal; greatest monthly, 4.73, at Farmington; least monthly, 0.14, at Crookston.

Wind.—Prevailing direction, south.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was 3.6 above the normal; maximum, 85, at Brookhaven, 14th; minimum, 18, at Vaiden, 1st; greatest monthly range, 65, at Brookhaven; least monthly range, 34, at Bay Saint Louis.

Precipitation.—The average was 0.25 below the normal; greatest monthly, 8.00, at Bay Saint Louis; least monthly, 1.71, at Water Valley.

Wind.—Prevailing direction, southeast.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MISSOURI.

Temperature.—The mean was 8.3 above the normal; maximum, 76, at South McAlester, Ind. T., 6th and 11th; minimum, —1, at Adrian, 25th, and at Pickering, 7th; greatest monthly range, 70, at Adrian; least monthly range, 44, at Herrmann and Cairo, Ill.

Precipitation.—The average was 0.46 above the normal; greatest monthly, 4.50, at Conception; least monthly, 0.72, at Harris.

Wind.—Prevailing direction, south.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; J. H. Smith, Observer, Weather Bureau, assistant.*

MONTANA.

Temperature.—The mean was considerably above the normal; maximum, 63, at Fort Custer, 16th; minimum, —22, at Virginia City, 25th; greatest monthly range, 70, at Fort Custer; least monthly range, 58, at Martinsdale.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 1.75, at Martinsdale; least monthly, trace, at Livingston.

Wind.—Prevailing direction, west.—*E. J. Glass, Observer, Weather Bureau, Helena, director.*

NEBRASKA.

Temperature.—Maximum, 80, at Superior, 12th; minimum, —22, at Pawlet, 25th.

Precipitation.—Greatest monthly, 2.10, at Norfolk; least monthly, 0.27, at York.

Wind.—Prevailing direction, northwest.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was 2.0 below the normal; maximum, 66, at Wabuska, 1st; minimum, —33, at Elko, 25th.

Precipitation.—The average was 0.13 below the normal; greatest monthly, 8.46, at Genoa; least monthly, 0.20, at Downeyville.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 8.2 above the normal; maximum, 67, at Framingham, 4th, and at Gilbertville, 24th; minimum, —8, at Farmington, 31st, and at Chelsea, 17th; greatest monthly range, 63, at Farmington; least monthly range, 39, at Provincetown.

Precipitation.—The average was 0.27 above the normal; greatest monthly, 7.60, at Savoy; least monthly, 1.95, at Cornwall.

Wind.—Prevailing direction, northwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

The month was notable for an almost entire absence of snow, only trace being reported at a few stations.

Temperature.—The mean was 8.4 above the normal; maximum, 78, at Tenafly, 23d; minimum, 9, at Hanover and Somerville, 18th; greatest monthly range, 66, at Tenafly; least monthly range, 41, at Atlantic City.

Precipitation.—The average was 0.63 above the normal; greatest monthly, 5.32, at Dover, Del.; least monthly, 2.25, at Cape May C. H.

Wind.—Prevailing direction, southwest.—*E. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW MEXICO.

The month was unusually cold.

Temperature.—Maximum, 73, at La Luz, 1st; minimum, —23, at Dulce, 26th; greatest monthly range, 82, at Folsom; least monthly range, 50, at Fort Stanton.

Precipitation.—Greatest monthly, 4.97, at Chama; least monthly, 0.02, at Albuquerque.

Wind.—Prevailing direction, northwest.—*H. B. Hersey, Observer, Weather Bureau, Santa Fé, director.*

NEW YORK.

The month was remarkable for frequent warm spells and small amount of snowfall.

Temperature.—The mean was 8.3 below the normal; maximum, 68, at Brentwood and New York, 23d; minimum, —9, at Lyon Mountain, 17th; greatest monthly range, 65, at Malone; least monthly range, 41, at Fort Columbus.

Precipitation.—The average was 0.91 above the normal; greatest monthly, 6.77, at Utica; least monthly, 1.45, at Watervliet Arsenal.

Wind.—Prevailing direction, southwest.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

Temperature.—The mean was 2.5 above the normal; maximum, 76, at Willeyton, 26th; minimum, 3, at Linville, 29th; greatest monthly range, 64, at Willeyton; least monthly range, 44, at Kitty Hawk.

Precipitation.—The average was 1.81 below the normal; greatest monthly, 7.37, at Linville; least monthly, 0.53, at Littleton.

Wind.—Prevailing direction, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer, Weather Bureau, assistant.*

NORTH DAKOTA.

Temperature.—The mean was 5.4 above the normal; maximum, 47, at Moorhead, Minn., 9th, and at Fort Buford, 8th; minimum, —41, at Willow City, 26th; greatest monthly range, 83, at Willow City; least monthly range, 61, at Wild Rice.

Precipitation.—The average was 0.38 above the normal; greatest monthly, 3.32, at Grand Rapids; least monthly, 0.14, at Fort Buford.

Wind.—Prevailing direction, northwest.—*W. H. Fallon, Observer, Weather Bureau, Bismarck, director.*

OHIO.

Temperature.—The mean was 6.0 below the normal; maximum, 66, at Portsmouth, 3d; minimum, 9, at Wauseon and Marion, 18th; greatest monthly range, 52, at Hanging Rock and McConnellsville; least monthly range, 40, at Columbus.

Precipitation.—The average was 0.15 below the normal; greatest monthly, 3.40, at West Milton; least monthly, 1.49, at Toledo.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OKLAHOMA.

Temperature.—Maximum, 73, at Fort Supply, 1st; minimum, 8, at Fort Supply, 25th.

Precipitation.—Greatest monthly, 2.67, at Guthrie; least monthly, 0.69, at Purcell.

Wind.—Prevailing direction, south.—*Louis Dorman, Observer, Weather Bureau, Oklahoma City, director.*

OREGON.

Heavy rain suspended all agricultural operations.

Temperature.—The mean was 0.4 below the normal; maximum, 66, at Roseburgh, 15th; minimum, —11, at Lakeview, 24th; greatest monthly range, 66, at Lakeview; least monthly range, 26, at Hood River.

Precipitation.—The average was 2.87 above the normal; greatest monthly, 21.50, at Cascade Locks; least monthly, 0.98, at Hardman.

Wind.—Prevailing direction, south.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was 8.0 above the normal; maximum, 68, at Meadville, 5th; minimum, —3, at Somerset, 18th; greatest monthly range, 66, at Somerset; least monthly range, 38, at Kane.

Precipitation.—The average was 1.12 above the normal; greatest monthly, 6.53, at Drifton; least monthly, 2.00, at Blue Knob.

Wind.—Prevailing direction, southwest.—*Under direction of the Franklin Institute, Philadelphia; H. L. Ball, Observer, Weather Bureau, assistant.*

SOUTH DAKOTA.

Temperature.—The mean was 7.3 above the normal; maximum, 63, at Mitchell, 1st; minimum, —25, at Webster, 26th; greatest monthly range, 78, at Flandreau; least monthly range, 52, at Onida.

Precipitation.—The average was 0.50 above the normal; greatest monthly, 3.30, at Webster; least monthly, 0.05, at Rapid City.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Observer, Weather Bureau, Huron, director.*

TENNESSEE WEATHER CROP SERVICE.

Temperature.—The mean was 3.0 above the normal; maximum, 72, at Savannah, 14th; minimum, 14, at Springdale and Riddleton, 1st, and at Rugby, 8th; greatest monthly range, 55, at Riddleton; least monthly range, 30, at Bethel Springs.

Precipitation.—The average was 1.03 above the normal; greatest monthly, 7.32, at Covington; least monthly, 2.29, at Carthage.—*J. B. Marbury, Observer, Weather Bureau, Nashville, director.*

TEXAS.

Temperature.—The mean was 2.9 above the normal; maximum, 90, at Sugar Land, 6th; minimum, 8, at El Paso, 8th; greatest monthly range, 66, at Hartley and Sugar Land; least monthly range, 36, at Galveston.

Precipitation.—The average was 0.51 above the normal; greatest monthly, 10.31, at Austin; least monthly, 0.25, at San Antonio.

Wind.—Prevailing direction, southeast.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

UTAH.

Temperature.—The month was colder than the average; maximum, 71, at Saint George, 1st; minimum, —19, at Nephi, 25th; greatest monthly range, 69, at Cisco; least monthly range, 41, at Snowville.

Precipitation.—Greatest monthly, 2.90, at Grouse Creek; least monthly, 0.15, at Green River.

Wind.—Prevailing direction, northwest.—*G. N. Salisbury, Observer, Weather Bureau, Salt Lake City, director.*

VIRGINIA.

Temperature.—Maximum, 76, at Stanardsville, 10th; minimum, 6, at Lexington, 1st; greatest monthly range, 68, at Richmond; least monthly range, 45, at Bedford City.

Precipitation.—Greatest monthly, 5.03, at Avon; least monthly, 1.19, at Cape Charles.

Wind.—Prevailing directions, south and southwest.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

Temperature.—Maximum, 61, at East Sound, 16th; minimum, —6, at Baker City, Oregon, 25th; greatest monthly range, 46, at Dayton; least monthly range, 23, at Tatoosh Island and Aberdeen.

Precipitation.—The average was 2.14 above the normal; greatest monthly, 23.91, at Neah Bay; least monthly, 1.99, at Dayton.

Wind.—Prevailing direction, south.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WEST VIRGINIA.

Temperature.—Maximum, 75, at Elizabeth, 3d; minimum, 6, at Pleasant Hill, 18th; greatest monthly range, 65, at Point Pleasant; least monthly range, 43, at Alderson.

Precipitation.—Greatest monthly, 5.02, at Kingwood; least monthly, 1.55, at Moorefield.

Wind.—Prevailing direction, southwest.—*W. W. Dent, Observer, Weather Bureau, Parkersburgh, director.*

WISCONSIN.

Temperature.—The mean was 7.0 above the normal; maximum, 70, at La Crosse, 3d; minimum, —23, at Barron, 27th; greatest monthly range, 72, at La Crosse and Osceola Mills; least monthly range, 39, at Beaver Dam.

Precipitation.—The average was 1.53 above the normal; greatest monthly, 5.75, at Lincoln; least monthly, 1.42, at Delavan (near).

Wind.—Prevailing direction, southwest.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, director.*

WYOMING.

Temperature.—Maximum, 67, at Casper, 10th; minimum, —25, at Lander, 25th; greatest monthly range, 81, at Lander and Fort Fetterman; least monthly range, 55, at Fort Laramie and Sundance.

Precipitation.—Greatest monthly, 3.24, at Evanston; least monthly, 0.00, at Wheatland.

Wind.—Prevailing direction, west.—*E. M. Ravenscraft, Observer, Weather Bureau, Cheyenne, director.*

METEOROLOGICAL TABLES.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, December, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Alabama.	°	°	°	*Ins.*
Bermuda *†	74	23	51.4	2.31
Brewton †	77	23	51.6	5.25
Carrollton	71	24	40.4	9.03
Chepultepec	62	24	40.0	4.80
Childersburgh †				4.93
Citronelle †	72	32	54.6	5.19
Claiborne Landing				3.45
Cordova †				6.71
Daphne	86	29	60.3	5.92
Decatur (1) †				6.06
Double Springs †m	52	21	39.3	3.38
Florence (1) †				4.50
Gadsden †				4.64
Greensborough	72	28	52.0	5.03
Jemison †	78	31	53.3	3.61
Livingston (1) †	73	22	50.4	5.46
Lynn †				7.64
Mountain Home	68 *d*	12 *d*	45.8 *d*	6.77
Mt. Vernon B'ks	81	25	55.2	6.15
Newburgh	68	21	49.2	4.34
Orrville †	75	24	50.3	
Oxanna †	69	25	48.9	3.78
Pushmataha †	73	24	52.9	4.25
Selma (1)				5.62
Scottsborough	66	19	44.0	2.84
Sturdevant †				3.33
Talladega †				4.94
Tallassee Falls †				5.48
Tuscaloosa †				4.88
Tuscumbia (1) †	67	22	47.8	4.13
Union Springs †	74	25	48.2	4.78
Valley Head †	66	18	44.6	5.77
Wiggins *	77	23	52.7	6.65
Alaska.				
Juneau †	39	1	27.8	7.03
Arizona.				
Aris. Can. Co. Dam. †	75	19	48.8	0.23
Benson*	66	23	42.7	0.38
Bisbee	70	15	40.9	0.48
Buckeye †				0.00
Calabasas *†	68	17	40.5	0.03
Casa Grande *†	80	20	46.2	0.17
Dos Cabezos †				0.76
Dragoon Summit*	63	12	41.1	T.
Dudleyville	70	14	44.6	0.58
Eagle Pass*				0.75
Farleys Camp	62	18	37.7	0.45
Flagstaff	68	—18	28.8	3.00
Florence †	75	17	44.5	0.32
Fort Apache	63	—14	27.6	0.65
Fort Bowie	67	15	40.9	1.26
Fort Grant	71	15	40.6	1.18
Fort Huachuca	69	7	38.2	0.14
Fort Mohave † *i*	77	25	45.7	T.
Gila Bend (1) *†	66	30	50.0	0.25
Gila Bend (2) *	77	28	53.1	0.07
Grand Central Mill				T.
Holbrook †	62	— 7	28.3	0.89
Mount Huachuca †	66	10	39.7	0.40
Natural Bridge				1.97
Navajo Springs †				0.00
New River	73	21	47.2	0.32
Oracle †	66	16	39.8	T.
Oro				1.30
Payson				1.81
Peoria	75	15	44.4	0.29
Phœnix (1)	77	13	49.6	0.13
Phœnix (2) †	70	15	47.0	0.14
Red Rock *	74	30	51.8	0.23
Reynert	73	19	49.1	0.03
Saint Johns †				0.42
San Carlos	74	11	39.1	1.44
Signal	71	18	44.3	0.66
Strawberry				1.22
Tempe	76	14	48.4	0.19
Teviston				0.05
Texas Hill*	70	33	48.2	
Tombstone †	70	14	44.2	0.11
Tucson (1) †	72	15	44.8	0.28

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona—Cont'd.	°	°	°	*Ins.*
Tucson (2) *	72	22	47.2	0.23
Walnut Grove				0.70
Walnut Ranch †				0.86
Whipple Barracks	62	— 2	31.4	1.19
Willcox*	64	20	42.7	0.85
Yuma * *k*	78	28	52.8	
Arkansas.				
Arkadelphia †				7.41
Arkansas City †				6.98
Black Rock *†	70	18	46.4	2.96
Brinkley †	69	25	50.1	5.07
Camden †	72	23	50.1	6.38
Conway *	65	23	46.9	4.26
Corner Stone * *d*	67	23	47.8	4.47
Dallas †	67	19	46.9	4.69
Dardanelle †				3.44
Devall Bluff † *j*	69	19	47.0	3.31
El Dorado †	68	19	47.8	6.08
Fayetteville †	64	14	43.6	2.11
Forrest City †	70	26	50.8	6.56
Fulton †				3.92
Gaines Landing †				6.36
Harrison †	65	15	43.1	2.92
Helena (1) †				7.46
Helena (2) †	68	24	47.8	6.66
Hope †	71	22	49.1	6.35
Hot Springs	69	16	46.0	6.75
Lead Hill*	67	16	44.4	1.48
Lonoke *	66	22	50.9	7.50
Monticello †		21		4.02
Mount Nebo †	59	13	42.7	3.20
Newport (1) †				4.91
Newport (2) †	66	28	46.6	3.23
Osceola †	69	25	46.3	5.58
Ozark † *j*	64	20	47.3	4.47
Ozone †	57	15	42.8	4.98
Pine Bluff †	67	22	46.6	4.86
Rogers	64	16	42.4	1.99
Stuttgart †	70	17	47.8	5.08
Winslow *†	60	16	46.1	3.39
California.				
Alcalde	70	25	47.9	4.00
Alcatraz Island	64	36	48.8	7.31
Almaden*	64	30	48.0	5.45
Alvarado †	70	28	51.5	5.62
Angel Island	70	32	48.8	5.48
Antioch*	70	29	46.8	4.43
Aptos*	62	22	47.8	7.64
Ballast Point L. H				0.70
Beaumont*	76	24	47.5	2.43
Belmont*	68	25	48.6	0.00
Benicia Barracks	64	29	44.5	4.12
Berkeley	63	32	46.8	6.22
Bishop Creek*	67	6	33.7	3.52
Brighton*	68	28	45.5	3.41
Castroville *	67	27	51.4	4.44
Chico*	68	20	43.9	4.39
Colfax*	60	21	40.2	11.04
Colton *	80	25	51.3	0.87
Crescent City L. H				11.86
Delano *	68	29	45.3	1.60
Delta *	59	25	39.2	7.21
Dunsmuir *	56	15	38.9	9.65
East Brother L. H				2.40
Edgwood *	47	16	32.0	2.80
Elmira*	65	28	46.5	4.92
El Verano*	67	27	46.5	7.67
Emigrant Gap *	50	10	29.2	12.90
Esparto *	68	30	47.2	2.84
Fernando *	71	30	50.6	1.03
Florence*	73	27	51.9	1.95
Fort Bidwell	46	— 4	26.6	2.76
Fort Gaston	61	25	39.8	18.21
Fort Mason	62	34	49.0	5.28
Galt*	65	27	45.2	4.32
Gilroy *	62	28	47.6	5.80
Girard *	61	20	39.1	3.56
Glen Ellen*	70	24	47.7	9.94
Haywards *	63	31	45.1	6.09

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Humboldt L. H				9.22
Huron *	75	26	44.5	1.09
Ione *	63	20	43.9	4.63
Jolon				2.99
Keene *	62	23	39.7	6.37
Lathrop *	68	28	44.6	3.47
Laurel *	67	25	47.0	8.44
Lemoore*	73	24	44.0	1.93
Lime Point L. H				6.38
Livermore*	62	28	47.5	4.42
Livingston *	68	28	46.7	3.74
Long Beach*	74	26	49.5	
Los Banos *	62	26	45.0	3.05
Los Gatos (1) *	61	26	46.8	6.97
Mammoth Tank *‥	79	25	48.0	T.
Mare Island L. H				4.03
Marysville (1) *	70	25	47.4	3.77
Menlo Park *	62	29	48.3	5.26
Monson *	67	28	44.7	4.13
Montague *	53	20	34.3	1.83
Monterey *	68	26	51.7	4.72
Newark	65	32	49.6	5.53
Norwalk *	78	32	50.3	1.49
Oakland (2) *	64	32	49.4	5.92
Oroville*	72	31	47.9	4.97
Pajaro *	66	32	49.7	6.62
Paso Robles*	68	15	41.6	4.09
Petaluma	68	26	47.3	5.77
Piedras Blancas L H				4.24
Pigeon Point L. H				5.21
Pleasanton	72	25	43.9	3.99
Pt. Ano Nuevo L. H				8.40
Point Arena L. H				13.52
Point Bonita L. H				7.07
Pt. Conception L. H				2.04
Point Fermin L. H				0.41
Point George L. H				6.34
Pt. Hueneme L. H				1.55
Point Montara L. H				6.42
Point Pinos L. H				5.27
Point Reyes L. H				6.80
Point Sur L H				3.77
Pomona *	80	22	49.5	1.64
Presidio of San F	68	31	48.2	5.88
Puente *	75	33	52.7	1.50
Ravenna *	67	28	43.9	
Redding (1)	65	27	42.1	8.36
Riverside (2) †	78	28	49.3	0.68
Roe Island L. H				3.05
Rumsey *	65	30	46.8	4.98
Salinas (2) *	64	25	44.6	5.40
Salton *	80	18	53.2	0.00
Sanger Junction*	62	30	45.7	3.26
San Ardo (1) *	68	20	45.8	1.57
San Diego B'ks	69	30	51.6	1.36
San Luis L. H				3.21
San Mateo *	60	30	47.2	7.86
Santa Ana*	75	29	45.8	1.66
Santa Barbara L. H				1.86
Santa Cruz (1) *	68	31	50.4	8.14
Santa Cruz L. H				8.30
Santa Monica*	72	31	52.7	1.52
Santa Paula *	74	28	51.6	1.54
Santa Rosa	70	27	49.5	8.64
Seven Palms *	83	30	53.9	0.23
Sims *	53	12	33.6	7.36
Sisson	51	10	30.7	11.20
Soquel *	66	28	48.7	
S. E. Farrallon L. H				5.18
Spadra *	75	27	50.4	
Summit*	38	2	24.6	11.90
Tehachapi *	53	12	31.8	3.10
Tehama*	61	30	46.4	4.79
Templeton *	67	18	43.1	4.91
Tracy *	72	31	57.1	3.57
Traver *	68	30	42.9	2.22
Trinidad L. H				10.88
Tropico *	78	30	52.1	0.81
Truckee (1) *	46	—14	23.7	6.34
Turlock * (1)	68	28	47.7	3.04

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Vacaville (2) *	73	30	46.8	6.71
Valley Springs *	65	30	45.8	5.75
Vina *	66	26	44.3	3.53
Volcano Springs *	78	23	53.2	
Westley *	69	27	50.0	3.25
Williams *	68	28	45.3	2.05
Winters *	68	28	48.8	3.57
Yerba Buena L H				6.01
Colorado.				
Abbott				1.10
Agate				1.02
Alamosa †				0.63
Alma	48	—18	14.3	0.68
Antonito †	50	—20	16.2	1.50
Apishapa *†	52	7	28.0	3.00
Arboles				2.72
Aroya				1.19
Avoca †				1.33
Bennet				1.70
Box Elder				0.20
Breckenridge				4.75
Brush				0.79
Burlington †				1.74
Byers				1.20
Carson †	40	—16	7.6	3.28
Castle Rock †				2.30
Cheyenne Wells *†	61	— 5	27.6	2.25
Climax * †	43	—26	11.3	3.80
Como (near) †	42	—14	16.4	1.37
Cope *e*	56	— 7	26.8	2.21
Crook †	60	— 8	27.3	0.20
Cumbres †	46	—20	14.0	9.70
Deer Trail				1.58
Del Norte †	58	—19	18.7	1.25
Delta †	53	—14	22.0	0.70
Dillon				3.86
Downing † *m*	47	—20	19.0	3.83
Dumont				1.45
East Dale				2.15
First View				1.95
Fort Collins (near)				0.51
Fort Logan	70	— 8	29.3	0.35
Fruita †	60	— 8	23.9	1.26
Gaynor				0.47
Georgetown †	47	— 6	24.3	1.20
Glen Eyrie †	59	— 5	31.1	0.88
Greenhorn †	59	—16	27.5	3.75
Grover †	57	— 5	28.3	0.27
Hugo	56	— 8	26.2	1.00
Husted †	61	—21	27.9	0.69
Idaho Springs	54	— 7	25.8	1.65
Jefferson *†	54	— 6	19.1	1.31
Julesburg †	64	— 8	29.9	0.32
Kirk				2.00
Kit Carson				0.35
La Porte				0.53
Las Animas †	72	— 4	30.3	0.30
Lavender				5.03
Lay				1.14
Le Roy *†	55	— 2	26.0	0.95
Livermore *e*	48	— 2	24.9	0.33
Longmont *e*	55	—14	28.3	0.90
Loveland				0.60
Magnolia				0.75
Manhattan				0.50
Meeker	48	—18	18.8	2.10
Middle Box Elder				0.48
Minneapolis				2.31
Monte Vista (1)	49	—22	11.5	0.99
Moraine †	51	—15	23.6	0.92
Pagoda (near) †	51	—16	21.0	2.40
Parachute †	65	—10	24.6	1.95
Paradox †				1.61
Platoro †	37	—25	9.8	6.90
Red Cliff				4.00
Rico				3.70
Robb †	59	3	28.6	1.33
Rocky Ford †	69	— 4	30.5	1.57
Saint Cloud				0.70
Sanborn				8.89

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Colorado—Cont'd.	°	°	°	*Ins.*
San Luis †	47	—26	18.4	2.58
Sedgwick	.....	.....	.....	0.09
Sheridan Lake*†	68	— 3	29.8	1.58
Smoky Hill Mine †	56	—10	28.4	2.00
Springfield†	.....	.....	.....	3.99
Stamford	.....	.....	.....	7.35
Steamboat Springs†	40	—26	13.6	3.40
Table Rock d	53	—12	22.0	1.94
T. S. Ranch †	53	— 5	25.8	0.90
Thou †	64	—11	27.6	0.44
Twin Lakes	.....	.....	.....	3.30
Vilas	.....	.....	.....	3.18
Villa Grove	.....	.....	.....	1.80
Ward District	.....	.....	.....	0.99
Watervale	.....	.....	.....	4.15
Watkins	.....	.....	.....	1.65
Wray	.....	.....	.....	0.83
Yuma †	.....	.....	.....	1.25
Connecticut.				
Canton	57	8	37.0	5.04
Colchester	60	8	39.3	5.13
Falls Village	.....	.....	.....	4.88
Fort Trumbull	60	11	40.8	3.71
Hartford (2)	.....	.....	.....	5.35
Lake Konomoc	.....	.....	.....	3.58
Lebanon	.....	.....	.....	4.69
Mansfield	59	7	37.0	4.96
Middletown	62	10	37.9	5.08
New Hartford (1) †*	50	5	31.2	4.67
New Hartford (2)	.....	.....	.....	5.43
Newington	.....	.....	.....	4.77
N. Grosvenor Dale	59	14	39.6	3.89
Norwalk † o	62	13	43.8	1.33
Southington*	57	10	37.2	5.30
South Manchester	.....	.....	.....	4.99
Stevenson	.....	.....	.....	6.18
Thompson	55	7	36.6	.....
Voluntown †	60	10	39.2	3.36
Wallingford †	.....	.....	.....	4.97
Waterbury	59	6	35.0	5.71
West Simsbury	.....	.....	.....	4.89
Delaware.				
Dover †	68	15	43.0	3.58
Kirkwood*	64	.....	40.5	.....
District of Columbia.				
Dist'ing Reservoir*	62	15	41.6	4.15
Long Bridge †	.....	.....	.....	2.59
Rec'ing Reservoir*	63	16	41.2	4.01
Washington B'ks	65	17	43.6	2.72
West Washington*	73	16	43.8	3.84
Florida.				
Amelia	76	35	58.4	4.10
Archer †	89	30	61.3	2.24
De Land (1) †	87	35	63.6	4.50
Eustis †	84	38	63.4	3.14
Fort Barrancas	80	28	54.4	4.02
Fort Meade †	83	39	66.1	0.65
Homeland	83	40	68.3	0.30
Hypoluxo* †	80	55	72.3	1.07
Manatee †	85	42	65.2	0.49
Merritta Island †	81	52	68.0	2.57
Myers †	83	46	66.7	0.50
Ocala* †	79	37	60.6	.....
Orange City †	84	40	64.2	4.39
Pasadena †	82	34	63.5	2.11
St. Francis B'ks	79	39	61.6	5.25
St. Petersburg †	88	42	64.8	0.81
Tallahassee †	75	30	55.2	3.00
Tarpon Springs †	84	36	63.2	1.49
Georgia.				
Albany †	73	26	54.1	2.51
Allapaha †	75	26	54.3	2.60
Americus †	75	21	51.0	3.47
Athens (1)	64	22	47.2	2.57
Athens (2) †	79	18	47.0	3.24
Blakely* †	75	28	53.4	5.28
Canton †	.....	.....	.....	5.43
Columbus †	69	26	48.2	4.94
Cordele †	74	31	49.6	3.11
Diamond	63	19	43.2	6.65
Elberton †	70	24	49.6	3.33
Forsyth	70	28	52.0	3.60
Fort Gaines †	76	15	48.0	4.75
Fort McPherson	79	22	46.6	3.63
Gillsville* †	64	25	47.9	3.70
Hephzibah † *	70	27	53.4	0.83
Lithia Springs	71	26	50.0	3.76
Louisville	76	21	51.0	3.23
Marietta* †	65	20	45.4	4.01
Milledgeville †	70	24	49.8	3.41
Millen †	79	16	50.2	2.64
Monticello †	.....	.....	46.6	2.27
Point Peter*	.....	20	45.2	.....
Poulan †	77	23	52.1	3.05
Quitman (1)	77	29	55.1	2.25
Quitman (2) †	79	36	59.4	1.90
Resaca † a	.....	.....	.....	2.84
Rome †	.....	.....	.....	4.62
Thomasville (2) †	79	28	54.8	3.82
Toccoa †	60	21	46.3	3.68
Union Point †	70	21	45.7	2.67
Idaho.				
American Falls †	44	—22	19.3	2.09
Boise Barracks	53	0	28.4	1.90
Era	44	—17	16.8	3.37
Fort Sherman	59 h	2	36.1 d	7.88
Garden Valley	41	—14	22.3	4.58
Henrys Lake †	41	—33	10.8	3.90
Kootenai	48	3	30.6	2.11
Payette	56	— 5	26.4	1.21
Ruthburg *†	38	8	27.7	2.10
Illinois.				
Alton †	.....	.....	.....	1.44
Aurora (1) †	53	4	32.4	1.66
Aurora (2)	55	3	34.9	2.48
Beardstown †	.....	.....	.....	0.87
Beason*	58	13	36.8	1.43
Carlinville*	60	15	36.8	1.08
Charleston	62	15	37.9	1.90
East Peoria*	65	14	38.6	2.96
Flora	67	12	40.5	2.35
Fort Sheridan	71	4	32.7	0.90
Golconda*	66	22	43.9	3.84
Greenville	62	14	39.8	1.52
Griggsville †	69	9	38.4	0.87
Hennepin †	60	— 2	31.7	2.28
Irishtown	.....	.....	.....	1.05
Jerseyville	62	12	39.6	0.87
Jordans Grove*	63	16	41.2	1.83
Lanark*	60	4	30.5	2.00
Louisville*	64	18	38.3	2.20
Martinsville*	65	20	40.1	0.99
Mascoutah	70	14	40.7	1.40
Mattoon*	58	18	40.9	1.90
McLeansborough*	66	18	42.5	2.35
Mount Carmel †	.....	.....	.....	3.25
New Haven †	.....	.....	.....	5.52
Olney (1)*	65	20	42.1	2.37
Olney (2)*	64	20	40.3	3.22
Oswego*	54	0	33.3	1.93
Ottawa †	58	6	36.3	1.74
Palestine †	65	17	40.0	2.13
Pana*	64	18	41.0	1.79
Peoria (1) †	.....	.....	.....	2.33
Peoria (2) *	62	8	38.5	2.39
Philo †	62	14	37.3	1.55
Rantoul *	61	11	34.9	1.19
Riley †	54	1	31.4	2.16
Rockford	55	8	33.2	2.57
Rock Island Ars'l	52	3	31.2	1.30
Rushville	58	11	35.5	2.13
Sandwich †	58	0	34.6	2.31
Sycamore*	54	5	33.9	2.37
Warsaw †	.....	.....	.....	0.06
White Hall*	60	12	38.5	0.93
Winnebago * †	53	5	32.3	2.26
Indiana.				
Angola	60	10	36.2	2.03
Butlerville	.....	17	39.9	3.73
Columbia City	59	14	36.4	1.78
Columbus	60	20	39.9	3.10
Connersville †	62	18	40.3	3.17
De Gonia Springs	63	22	44.6	4.57
Delphi	60	15	37.6	1.65
Evansville †	.....	.....	.....	0.06
Farmland	60	16	40.1	2.25
Franklin	60	17	39.7	3.55
Hammond †	65	11	.....	1.17
Huntingburgh	62	20	39.4	1.50
Huntington †	.....	.....	.....	2.29
Jeffersonville	64	20	42.4	3.81
La Fayette †	69	13	39.2	1.80
Logansport (1) †	.....	.....	.....	2.07
Logansport (2)	70	18	39.4	1.55
Marion †	62	8	38.6	2.19
Mauzy	60	13	36.5	3.00
Michigan City	62	18	37.3	1.65
Mount Vernon (1) †	.....	.....	.....	3.96
Mount Vernon (2)	.....	.....	.....	3.96
Muncie	62	21	41.0	1.35
Point Isabel †	65	15	42.5	3.62
Princeton *†	64	21	41.4	3.35
Rockville	60	11	39.0	2.59
Rushville †	.....	.....	.....	2.89
Shelbyville *†	62	20	40.2	3.21
Terre Haute †	65	20	40.2	2.41
Valparaiso †	57	9	35.5	2.41
Vevay	66	16	41.7	2.42
Vincennes †	.....	.....	.....	3.45
Worthington †	62	14	40.4	3.29
Indian Territory.				
Fort Supply	73	8	41.8	1.31
Healdton †	68	22	49.8	3.68
Purcell n †	70	15	46.4	0.69
South McAlester †	76	27	58.6	4.00
Tulsa †	.....	.....	.....	1.00
Iowa.				
Alta (1) †	50	— 9	28.6	2.49
Alta (2)	50	— 9	29.2	2.49
Amana †	55	1	32.2	1.58
Ames (1)*	55	— 3	31.7	2.40
Ames (2)	57	— 6	30.2	1.69
Atlantic †	60	— 1	32.0	1.88
Bancroft †	52	—10	28.6	1.65
Belle Plaine	55	— 1	31.7	1.93
Blakeville*	64	— 4	32.3	4.50
Blockton †	60	1	34.2	2.71
Bonaparte*	58	6	38.2	2.08
Carroll †	56	— 4	32.6	2.71
Cedar Falls †	54	— 5	30.6	2.74
Cedar Rapids †	55	2	32.8	1.77
Charles City †	50	— 4	27.9	3.59
Clarinda *†	60	4	34.8	2.27
College Springs *	62	3	37.6	2.76
Corning (1)	.....	.....	.....	2.24
Corning (2) †	60	2	34.2	1.89
Cresco †	51	— 7	28.3	3.44
Delaware*	.....	2	28.8	2.51
Eagle Grove	.....	— 6	28.6	3.93
Elkader †	53	0	30.5	3.26
Fairfield †	56	4	34.5	1.93
Fayette †	53	— 4	30.5	3.18
Fort Madison* †	58	6	39.1	1.73
Glenwood (1) †	72	— 2	38.0	1.21
Grand Meadow *	52	— 2	31.0	4.01
Greenfield	59	— 2	32.0	2.75
Grinnell †	54	— 1	33.0	1.52
Grundy Centre*	54	— 4	31.7	2.33
Hampton *	52	— 7	28.4	2.88
Havelock †	52	— 8	29.8	3.50
Hopeville †	58	1	32.7	1.49
Independence * †	51	2	31.7	2.38
Iowa City †	55	— 2	32.9	2.72
Keosauqua †	.....	6	35.6	1.26
Larrabee *†	50	—14	27.0	2.93
Le Claire †	.....	.....	.....	1.28
Logan †	60	— 2	34.6	2.72
Mason City †	53	— 8	27.3	3.40
Maxon *	58	0	32.0	2.91
Maquoketa *	56	4	33.2	4.00
Marshalltown †	55	— 2	31.5	2.50
McCausland*	54	4	32.3	1.83
Monticello †	54	4	31.3	2.09
Moorar	60	— 4	35.3	1.86
Mount Pleasant (1)*	56	.....	35.9	2.73
Mount Vernon*	57	0	33.2	.....
Murray †	58	4	33.8	1.66
Muscatine (2)	56	5	33.8	2.51
Osage * †	.....	— 5	27.2	3.15
Oskaloosa (1) †	58	3	35.8	2.96
Panama †	54	— 4	31.8	2.79
Richland*	.....	1	30.5	1.25
Storm Lake †	49	— 8	28.4	2.28
Tipton †	55	3	33.1	3.14
Vinton *	54	— 1	32.0	2.58
Washington	58	3	35.8	1.33
Webster City *	54	— 6	29.1	2.57
Williams *	53	— 8	26.0	2.22
Windsor	.....	.....	.....	2.91
Winterset †	58	0	33.7	2.55
Kansas.				
Abilene †	70	6	40.5	1.18
Allison * †	68	0	27.8	1.95
Altoona *†	63	10	39.9	1.51
Atchison †	62	9	39.2	2.90
Belleville	71	.....	.....	.....
Bucklin	.....	.....	.....	0.70
Buffalo Park*	66	1	.....	1.40
Burr Oak*	65	— 2	.....	0.85
Cawker City *	58	3	37.2	0.50
Collyer*	68	0	.....	1.75
Columbus † f	75	11	43.3	2.01
Concordia	65	6	35.4	1.39
Cunningham *†	68	4	37.3	1.27
Downs	.....	.....	.....	1.44
Elco *	66	10	39.5	3.49
Elk Falls	73	18	44.4	0.82
Ellis	66	12	.....	.....
Emporia * †	76	14	39.3	1.15
Englewood *	71	9	40.2	0.94
Eureka Ranch †	65	— 1	33.4	1.52
Ft. Leavenworth (1)	62	9	39.4	2.91
Ft. Leavenworth (2)	60	9	38.6	2.08
Fort Riley	67	1	37.6	0.85
Fort Scott *	59	8	.....	1.22
Gibson	62	— 1	33.7	1.41
Globe *	61	.....	34.2	2.61
Gove City * †	65	0	32.1	1.13
Grainfield *	64	3	.....	0.34
Grenola *	64	13	40.9	1.35
Grinnell *	70	0	.....	1.94
Halstead *	63	4	39.9	1.28
Havensville * †	68	4	39.2	0.87
Horton †	61	8	36.0	2.22
Independence †	66	10	40.8	2.41
Kansas City	63	7	38.4	2.02
Kiowa	70	8	41.1	1.75
Kirwin †	.....	.....	.....	1.20
La Crosse	67	4	37.4	0.33
Lakin †	66	— 7	33.4	1.20
Lawrence	63	10	38.3	2.41
Lebo †	66	3	38.8	1.73
Leoti †	70	— 6	31.2	1.24
Manhattan (1) †	.....	.....	.....	1.05
Manhattan (2)	67	5	38.0	1.09
Manhattan (3)*	62	5	34.5	0.96
McAllaster	70	— 2	30.8	1.90
McPherson †	66	4	37.9	0.01
Minneapolis	72	3	37.3	1.47
Monument	68	— 5	.....	.....
Morse †	61	7	36.2	2.16
Morton *	76	0	34.8	1.95
New Engl'd Ranch †	69	0	34.2	0.74
Oakley *	64	4	.....	.....
Oberlin †	.....	.....	.....	2.15
Oswego † e	66	15	42.3	1.74
Page City *	62	2	.....	1.08
Pauline *	65	7	38.6	2.50
Phillipsburgh	60	0	33.2	1.22
Plainville	64	7	.....	1.10
Pleasant Dale*	65	2	35.9	1.30
Rome *	68	8	40.5	2.82
Salina * †	64	10	37.7	0.82
Sedan †	66	8	41.1	2.98
Seneca †	64	— 2	34.8	1.01
Shields	81	1	44.3	0.59
Sterling †	66	6	39.8	1.38
Tribune	68	2d	32.6 e	1.31
Ulysses	.....	.....	.....	1.14
Wakefield *	68	7	38.7	1.40
Wa Keeney *	62	4	31.3	1.22
Wallace (1) †	.....	.....	.....	1.50
Wallace (2)	66	1	.....	.....
Weskan (1) *	65	5	.....	2.30
Weskan (2)	67	0	31.2	1.08
Winona	60	— 2	.....	.....
Yates Centre †	72	4	39.7	1.21
Kentucky.				
Bowling Green * †	67	20	45.0	4.37
Burnside †	.....	.....	.....	5.08
Catlettsburgh †	.....	.....	.....	5.02
Canton * †	65	20	45.0	5.60
Earlington	66	24	47.6	5.44
Edmonton †	64	19	42.1	3.38
Falmouth (1) †	.....	.....	.....	2.52
Fort Thomas	67	13	39.4	2.41
Frankfort (1) †	.....	.....	.....	3.45
Franklin *	70	22	45.4	5.23
Greensburgh †	.....	.....	.....	3.15
Harrodsburgh †	67	15	41.5	3.25
Louisa †	.....	.....	.....	3.25
Middlesborough †	64	16	41.2	5.40
Newport Barracks	71	16	40.1	2.14
Paducah †	.....	.....	.....	5.00
Pellville †	65	15	42.2	4.82
Richmond †	60	17	38.3	3.26
Shelbyville †	65	18	41.1	3.33
South Fork †	.....	.....	36.2	3.75
Williamsburgh	.....	.....	.....	3.00
Louisiana.				
Abbeville	80	27	56.0	6.48
Alexandria †	74	19	51.8	3.86
Baton Rouge	77	26	54.0	4.97
Cameron †	75	17	54.9	4.91
Cheneyville †	74	24	54.0	5.72
Coushatta (1) †	.....	.....	.....	5.45
Coushatta (2) †	76	18	51.0	6.26
Davis	77	18	50.6	4.01
Delhi	.....	.....	.....	1.41
Donaldsonville	77	29	56.2	3.44
Edgard	77	32	55.7	4.72
Emilie	76	27	54.2	3.69
Girard †	.....	.....	.....	4.22
Grand Cane h	67	19	48.1	7.20
Grand Coteau	74	29	54.7	4.86
Houmaf	78	25	53.6	5.70
Jackson Barracks	78	27	54.4	4.07
Jeanerette	78	24	56.0	5.10
La Fayette †	76	26	54.7	4.55
Lake Charles	77	22	51.0	5.70
Lawrence †	76	32	54.6	5.05
Liberty Hill	74	20	50.9	0.56
Luling	75	25	54.5	5.99
Mandeville	78	26	54.2	4.90
Marksville †	78	25	55.6	1.85
Maurepas	74	27	54.4	4.23
Melville †	75	24	54.2	5.21
Minden †	73	22	51.3	8.27
Monroe †	68 e	25 e	50.6 e	3.28
New Iberia	77	29	55.6	5.64
N. La. Ex. Station	73	21	49.2	3.80
Paincourtville	77	27	55.5	3.35
Plaquemine	84	23	51.0	4.93
Shell Beach	75	29	54.9	4.65
Sugar Ex. Station	75	29	56.0	4.42
Thibodeaux	.....	.....	.....	5.26
West End i	.....	.....	.....	5.00
Winnsborough	78	16	50.3	3.00
Maine.				
Belfast*	49	6	32.2	5.10
Calais	53	6	32.5	3.74
Cornish	54	3	33.0	4.87
East Machias †	51	5	32.3	3.81
Fairfield	53	— 5	29.9	4.56
Farmington †	55	— 8	29.0	5.64
Fort Preble	57	8	38.1	2.90
Kennebec Arsenal	52	— 1	32.2	5.22
Kents Hill	50	— 1	32.0	5.57
Lewiston	52	1	31.7	5.27
Orono †	52	2	31.6	4.76
Petit Menan	46	8	33.3	.....
West Jonesport*	48	8	34.0	.....
Maryland.				
Barren Creek Sp'gs †	68	11	42.9	2.99
Boettcherville	64	12	42.9	3.70
Cumberland (1) †	60	14	39.6	3.42
Cumberland (2)	66	19	44.3	3.28
Darlington †	62	10	42.7	2.02
Denton †	.....	.....	.....	2.99
Easton †	67	17	43.0	2.33

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Maryland—Cont'd.	°	°	°	*Ins.*
Fallston	61	14	40.8	3.92
Fort McHenry	64	15	42.5	3.33
Frederick	66	16	43.0	3.49
Great Falls*	65	14	40.4	2.77
Hagerstown	62	12	41.7	2.08
Jewell	62	19	42.4	2.77
McDonogh	66	16	43.5	3.67
Mt. St. Mary's Col.	63	11	41.2	3.91
New Market	62	12	40.3	3.50
Taneytown †	.....	.....	.....	3.86
Woodstock	63	13	41.1	3.31
Massachusetts.				
Adams	61	7	38.1	.....
Amherst	58	9	37.2	4.88
Amherst Ex Sta (1)	58	9	35.9	4.55
Amherst Ex Sta (2)	60	9	38.3	5.40
Andover	59	8	34.9	3.16
Ashland	.....	.....	.....	3.61
Blue Hill (sum't)	59	7	37.7	4.07
Blue Hill (base)	62	10	39.2	3.98
Blue Hill (valley)	62	11	38.4	4.04
Boston	.....	.....	.....	3.66
Cambridge (1)	59	9	37.0	3.29
Cambridge (2)	61	10	38.0	6.78
Chestnut Hill	64	12	39.2	3.73
Chicopee	.....	.....	.....	5.34
Clinton	.....	.....	.....	3.62
Concord †	61	10	36.2	3.07
Cotuit	62	11	38.9	3.77
Deerfield*	58	10	35.0	.....
Dudley	60	6	35.8	2.40
Egg Rock, Nahant	55	10	38.1	.....
Fall River (1)*	57	11	39.9	4.00
Fiskdale	.....	.....	.....	4.62
Fitchburg (1)*	56	8	35.6	4.26
Fitchburg (2)	60	7	30.6	4.02
Florida (1)	51	− 1	31.4	4.80
Florida (2)	52	1	30.8	5.34
Fort Warren	57	0	32.2	3.06
Framingham	67	8	37.8	3.76
Gilbertville	67	8	34.2	5.44
Groton (1)	59	8	37.0	3.89
Heath*	52	2	31.4	.....
Kendall Green	56	15	38.2	3.27
Lake Cochituate	63	11	38.2	3.33
Lawrence	57	9	37.0	3.23
Leicester	59	− 4	35.7	4.06
Leominster	.....	.....	.....	3.27
Long Plain	60	9	39.4	5.02
Lowell (1)	57	10	36.6	3.21
Lowell (2)	59	9	36.6	.....
Lowell (3)	59	9	36.4	.....
Ludlow (1)	57	4	34.8	4.85
Lynn	58	7	35.8	3.41
Mansfield	62	11	37.8	4.62
Medford	.....	.....	.....	2.43
Middleborough	61	7	37.8	3.45
Milton*	58	11	38.8	4.00
Monson	61	6	36.9	4.20
Mount Nonotuck	.....	.....	.....	4.01
Mystic Lake	.....	.....	.....	3.62
Mystic Station	.....	.....	.....	3.45
Nahant	55[i]	13[i]	37.6[i]	.....
New Bedford (1)	58	8	38.8	3.38
New Bedford (2)	58	9	41.8	3.71
Newburyport (1)	59	11	37.9	3.27
Northampton	55	10	37.0	4.72
North Billerica	57	10	38.6	3.27
Plymouth*	63	14	41.3	3.77
Princeton	58	4	35.8	2.16
Provincetown	55	15	40.4	3.15
Randolph	.....	.....	.....	3.72
Roberts Dam	.....	.....	.....	3.48
Salem (2)	.....	.....	.....	3.58
Savoy	51	.....	.....	7.60
Somerset* †	60	10	40.7	3.15
South Hingham	.....	7	.....	3.59
Springfield Armr'y	59	9	37.4	4.80
Taunton (1)	62	11	40.0	3.62
Taunton (2)	60	10	39.6	3.53
Taunton (3)	62	10	41.4	4.27
Taunton (4)	62	11	38.3	3.21
Wakefield	60	9	38.6	3.55
Waltham	.....	.....	.....	3.90
Wellesley	60	10	38.2	2.59
Westborough	60	10	38.2	3.25
Williamstown	56	7	35.0	3.59
Winchester	.....	.....	.....	3.20
Michigan.				
Adrian	58	11	34.6	2.27
Albion (1)	56	16	36.0	2.49
Allegan	57	13	36.2	2.02
Alma	55	14	32.7	3.93
Ann Arbor	58	13	33.4	2.95
Arbela	.....	.....	.....	3.13
Atlantic	45	5	26.9	3.40
Ball Mountain	56	12	32.8	1.97
Bear Lake	52	13	32.7	3.85
Bellaire	51	4	30.2	1.07
Bell Branch	50	14	32.5	1.59
Benton Harbor	60	14	38.2	2.08
Benzonia	53	15	33.6	3.98
Berlin	57	10	33.4	2.40
Berrien Springs (2)	.....	.....	.....	1.90
Birch Run	56	10	34.3	1.97

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Michigan—Cont'd.	°	°	°	*Ins.*
Birmingham	57	10	34.3	2.26
Bronson	61	13	32.6	1.30
Calumet	49	5	28.0	2.90
Caldwell	50	10	29.6	3.55
Charlevoix	52	20	34.3	3.43
Cheboygan	47	9	30.7	2.49
Clinton	53	5	31.8	1.02
Colon	56	13	32.7	0.99
Concord	57	11	34.3	1.44
Crystal Falls	51	− 8	25.1	2.01
Eden	58	13	35.0	2.35
Fairview	58	14	32.2	0.89
Fitchburgh	56	10	33.3	1.69
Flint	58	11	33.7	1.65
Fort Brady	49	3	30.4	3.16
Fort Mackinac	49	8	31.9	1.54
Fort Wayne	54	12	35.6	1.76
Fremont*	56	16	34.1	4.63
Grand Rapids	58	16	37.4	3.27
Grape	60	13	37.3	1.24
Grayling	50	8	31.6	0.80
Hanover	58	11	35.9	1.63
Harbor Springs	50	9	33.6	3.30
Harrison	50	0	31.3	0.65
Harrisville	52	12	32.6	4.56
Hart	55	18	36.0	2.15
Hayes	59	17	35.5	0.60
Highland Station*	52	11	33.6	2.15
Hillsdale	58	12	33.8	1.76
Howell	57	10	33.5	1.02
Hudson	60	8	33.6	1.80
Ivan	50	9	30.9	3.33
Jeddo	57	11	32.6	1.44
Kalamazoo	57	12	36.0	1.47
Lansing	57	11	35.0	1.89
Lathrop	47	− 2	28.4	3.56
McMillan	39	6	25.0	1.60
Madison	58	5	33.8	2.00
Marshall	56	13	34.1	1.46
May	60	13	33.3	2.40
Mio	50	12	31.5	.....
Montague	57	16	34.7	1.46
Mottville	59	10	35.2	1.22
Noble	58	12	32.4	1.25
North Aurelius	.....	.....	.....	1.68
North Marshall	60	8	33.6	1.20
Olivet	56	10	31.9	3.57
Ovid	56	13	33.0	2.41
Parkville	.....	.....	.....	1.79
Paw Paw	56	11	35.4	1.52
Pontiac	54	17	37.0	2.04
Pulaski	55	15	33.3	1.52
Rawsonville	60	12	35.7	1.75
Rockland	58[e]	− 7[e]	38.4[e]	3.10
Romeo	57	10	33.6	1.68
Saint Ignace	48	7	31.6	1.97
Saint Johns	62	16	35.2	1.33
Sand Beach	47	14	29.3	2.01
Standish	66	12	36.9	0.75
Thornville*	60	15	35.4	2.92
Vandalia	57	14	35.4	2.25
Vienna	.....	.....	.....	3.22
Washington	52	10	32.7	1.27
Weldon Creek	55	11	34.2	2.27
White Pigeon	54	10	32.4	1.38
Williamston	57	17	37.7	2.00
Ypsilanti	54	7	31.2	2.00
Minnesota.				
Alexandria†	.....	.....	.....	1.16
Alma City †	56	−10	27.6	2.95
Crookston †	42	−25	16.1	0.14
Farmington*	50	− 6	28.1	4.73
Fergus Falls†	.....	.....	.....	1.05
Fort Ripley †	.....	.....	.....	2.01
Fort Snelling	58	− 6	29.4	2.86
Granite Falls*	52	−12	25.6	.....
Kinbrae*	57	.....	25.3	2.48
L. Winnibigoshish	45	−15	21.2	1.70
Leech Lake*	45	−19	21.7	2.09
Mankato	52	− 9	30.7	2.40
Minneapolis*	49	− 6	27.2	3.46
Montevideo†	56	− 6	27.2	2.36
Morris	51	−17	22.9	1.45
Northfield †	55	− 8	28.4	3.92
Ortonville †	.....	.....	.....	0.89
Pine River*	47	−22	21.1	1.26
Red Wing	53	− 8	29.5	4.60
Redwood Falls†	.....	.....	.....	3.49
Rolling Green	46	−10	25.5	2.65
Saint Charles* †	53	− 5	28.1	4.10
Mississippi.				
Agricultural Col'ge	71	26	50.8	5.42
Bay Saint Louis †	71	37	53.2	8.00
Booneville	68	22	46.9	5.37
Brookhaven†	85	20	52.0	5.00
Canton †	72	26	51.3	4.45
Columbus (1)†	.....	.....	.....	4.25
Duck Hill[m]	72	26	50.0	.....
Edwards†	74	25	52.4	3.51
Enterprise†	74[m]	24[m]	52.6[m]	5.64
Fayette †	72	28	54.0	4.64
Greenville	67	26	50.3	3.40
Hattiesburgh †	79	26	57.3	4.35
Kosciusko †	70	23	50.4	5.90
Logtown †	77	29	54.6	5.00

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Mississippi—Cont'd.	°	°	°	*Ins.*
Louisville †	73	20	51.3	5.10
Okolona†	71	20	47.8	3.64
Palo Alto	71	23	48.1	4.62
Port Gibson†	75	19	52.5	4.21
Rienzi*	68[k]	28[k]	47.8[k]	6.00
Ship Island †	72	36	55.6	4.76
Vaiden†	78	18	48.8	4.11
Washington †	72[h]	25[h]	53.5[i]	5.69
Water Valley*	76	25	50.0	1.71
Waynesboro' (1) †	75	21	49.9	2.83
Yazoo City †	.....	.....	.....	3.62
Missouri.				
Adrian †	69	− 1	34.3	3.53
Appleton City†	65	10	40.4	1.12
Austin*	62	12	40.8	2.05
Boonville	.....	.....	.....	1.71
Brunswick	61	8	39.3	2.67
Cape Girardeau †	.....	.....	.....	1.90
Carrollton †	60	11	37.6	2.59
Carthage *†	68	12	41.6	2.25
Chillicothe (1)	60	8	38.6	1.93
Chillicothe (2)	62	6	41.2	1.50
Conception	60[e]	5[e]	37.8[f]	4.50
East Lynn*	59	6	39.6	1.33
Eight Mile *	61	10	39.8	1.73
Eldon*	68	10	42.5	1.25
Excelsior Springs*	58	− 4	35.1	2.30
Fayette	64	11	40.0	1.11
Fox Creek*	65	14	42.0	1.18
Glasgow	63	10	39.2	0.93
Gordonville *†	67	21	44.8	2.90
Harris* †	58[f]	5[g]	37.1[g]	0.72
Hermann* †	61	.....	41.2	1.20
Jefferson Barracks	64	14	42.5	1.30
Jefferson City†	71	11	40.6	0.88
Jerome †	.....	.....	.....	1.07
Lamonte (2)†	.....	.....	.....	1.47
Lebanon *	62	14	44.0	1.37
Liberty	62	4	37.1	3.51
Louisiana Bridge †	.....	.....	.....	0.64
Marble Hill	66	17	42.2	2.55
Marshall (2)	62[g]	12[h]	29.0[h]	1.32[e]
Mine La Motte	70	15	45.8	2.42
New Haven*	64	14	39.7	1.75
Oak Ridge *	72	21	46.3	3.10
Oregon (1)	63	7	37.2	3.18
Oregon (2)	62	7	36.8	3.22
Pickering*	55	− 1	31.4	2.98
Platte River*	64	2	33.2	3.62
Princeton*	59	7	37.3	3.94
Rolla	.....	.....	.....	1.24
Saint Charles (2)	68	13	42.5	1.37
Saint Joseph†	.....	.....	.....	1.46
Saint Louis	64	15	41.9	1.46
Sedalia	63	8	39.1	1.04
Shelbina	.....	.....	.....	0.16
Stellada†	63	10	41.1	1.42
Warrensburgh*	62	12	39.7	1.35
Warrenton	.....	17	38.6	1.50
Withers Mills	.....	.....	.....	1.65
Zeitonia	.....	.....	.....	3.30
Montana.				
Camp Poplar River	45	−21	18.0	0.10
Fort Assinaboine	60	−19	29.2	0.11
Fort Custer	63	− 7	29.4	0.45
Fort Keogh	55	−12	24.4	0.82
Fort Missoula	45	−10	24.8	1.82
Nebraska.				
Agee	.....	− 7	28.0	.....
Alliance †	61	−10	29.3	0.39
Ansley †	70	− 9	31.8	1.25
Auburn (1)*†	62	2	36.7	1.22
Bassett	62	0	29.6	1.12
Beatrice †	62	− 3	34.6	1.28
Burwell*	58	0	31.3	1.11
Creighton †	59	− 8	29.2	1.74
Crete	66	− 1	33.3	1.78
Culbertson (1) †	.....	.....	.....	2.03
David City* †	55	− 3	28.8	1.85
De Soto	55	− 2	32.0	1.72
Dunning*	53	0	29.8	0.30
Ericson* †	58	− 6	30.1	0.84
Ewing* †	62	−10	29.2	1.11
Fairbury*	63	2	.....	1.05
Fairfield	60	0	36.5	1.04
Fort Niobrara	70	−17	27.4	0.19
Fort Omaha	56	− 2	32.6	0.91
Fort Robinson	57	− 3	.....	0.52
Fort Sidney	66	− 5	29.2	0.05
Franklin*	64	− 8	34.9	1.37
Fremont*	60	2	33.0	0.77
Geneva	.....	.....	.....	1.10
Genoa †	62	− 3	30.0	1.73
Gering †	63	− 2	31.3	1.03
Grand Island	68	− 4	33.2	2.10
Grant	.....	.....	.....	1.33
Hartington †	60	− 7	28.8	1.79
Harvard *	62	− 5	30.3	1.24
Hastings†	66	0	.....	1.50
Hay Springs †	55	− 8	26.7	0.65
Hebron	67	− 4	34.6	1.45
Holdrege	.....	3	28.2	1.10
Imperial	60	− 4	28.0	1.50
Kennedy*	62	− 2	31.0	0.40
Lexington* †	66	− 7	28.0	1.84

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Nebraska—Cont'd.	°	°	°	*Ins.*
Lincoln	62	0	34.7	1.25
Long Pine	60	−10	30.6	1.00
Marquette*	61	0	.....	1.61
Mayberry	70	3	38.0	1.45
Minden*	62	0	30.2	1.38
Nebraska City *	56	1	33.8	1.55
Norfolk †	58	− 4	29.6	2.10
North Loup †	61	−13	28.9	0.80
Oakdale	60	−11	28.7	1.39
O'Neill	60	−10	28.6	1.40
Ough (2)	.....	.....	.....	1.15
Pawlett†	60[g]	−22[g]	25.3[g]	0.42
Plattsmouth†	.....	.....	.....	2.55
Precept *	62	1	31.6	1.56
Purple Cane *	62	− 3	34.0	0.31
Ravenna	61	− 6	29.9	1.98
Sargent	.....	.....	.....	1.10
Seward *	70	3	36.1	1.60
Springview	60	− 6	31.2	0.77
Superior *	80	0	40.6	.....
Syracuse *	61	2	34.2	1.09
Thedford	.....	.....	.....	1.25
Wallace *	50	− 2	27.6	0.51
Weeping Water*	63	1	33.5	1.65
West Hill*	60	− 4	29.1	1.33
West Point	60	.....	.....	1.50
Wilcox (1)	.....	.....	.....	1.39
York	.....	.....	.....	0.27
Nevada.				
Battle Mountain*	52	−10	28.7	3.52
Beowawe	49	−30	22.3	2.75
Browns *	60	− 3	34.4	0.65
Golconda *	50	− 4	26.7	2.22
Halleck *	42	.....	14.9	5.10
Hawthorne (1)*	61	5	32.9	1.61
Hot Springs*	55	−10	20.2	1.80
Humboldt *	50	0	28.6	0.62
Lovelock *	60	2	34.7	0.45
Reno*	56	2	28.3	2.25
Wadsworth	36	− 3	25.3	0.52
Wells *	50	−20	20.8	4.33
New Hampshire.				
Antrim	.....	.....	.....	4.44
Belmont	.....	.....	.....	4.27
Berlin Falls	51	− 6	27.4	.....
Berlin Mills	53	− 5	28.0	4.56
Concord (1)	56	5	34.7	4.11
East Canterbury	50	− 4	27.2	3.60
Groveton *	48	− 4	29.7	2.86
Hanover (1)	.....	.....	29.5	2.89
Hanover (2)	59	0	31.6	3.32
Lake Village	.....	.....	.....	4.32
Littleton	54	− 5	29.0	3.71
Manchester	59	9	34.2	3.64
Mine Falls	.....	.....	.....	3.58
Nashua	59	9	36.4	3.50
Newton	58	7	36.4	3.16
North Conway	56	− 1	30.9	6.60
Pennichuck Station	.....	.....	.....	3.27
Plymouth	54	− 1	30.1	5.45
Stratford	53	− 5	31.2	3.46
Walpole	57	3	32.2	3.60
West Milan	55	− 7	28.8	4.30
Wiers Bridge	.....	.....	.....	4.34
Wolfborough	.....	.....	.....	5.11
New Jersey.				
Allaire	64	12	40.6	.....
Asbury Park	60	14	41.2	2.99
Bayonne	67	15	41.3	3.65
Belleville	.....	.....	.....	4.37
Belvidere	59	14	37.4	4.09
Beverly †	69	14	39.4	4.50
Blairstown	60	13	36.9	4.89
Bridgeton (1)	63	18	43.4	4.26
Bridgeton (2)	65[d]	17[d]	45.1[d]	3.99
Camden	67	16	41.2	4.35
Cape May C. H. †	62	12	43.8	2.25
Deckerton	60	10	38.4	4.46
Dover	62	10	38.8	5.32
Egg Harbor City	62	11	40.6	3.25
Elizabeth †	62	13	39.0	3.93
Franklinville	66	12	40.4	4.82
Freehold	68	12	41.4	4.16
Gillette	63	13	38.8	5.07
Hanover	62	9	37.2	4.97
Highland Park	68	13	40.3	4.22
Imlaystown	68	13	41.9	4.02
Junction	.....	.....	.....	4.92
Lambertville	64	16	38.8	5.29
Locktown	65	14	40.0	4.92
Moorestown	67	16	40.7	4.60
Mount Holly	68	16	42.9	.....
Newark (1)	66	12	41.3	4.68
New Brunswick (1)	69	13	41.6	4.55
New Brunswick (2)	67	14	40.4	4.42
Newton †	59	10	37.5	4.30
Ocean City	58	18	40.3	3.50
Oceanic	68	15	43.0	3.65
Paterson	67	15	42.0	5.18
Plainfield	66	14	41.5	4.34
Rancocas*	68	15	42.5	4.55
Salem	67	17	40.8	4.33
Somerville	67	9	41.8	4.76
South Orange*	68	13	39.6	4.70
Tenafly	78	12	41.3	4.90

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New Jersey—Cont'd.	°	°	°	*Ins.*
Trenton *.....	70	13	41.0	3.52
Vineland *d*	68	14	41.5	4.51
Whiting	71	13	43.6	4.10
New Mexico.				
Albert †.....	67	[illegible]	35.1	2.98
Albuquerque	64	[illegible]	35.9	0.02
Antelope Springs †.	57	0	25.0	1.15
Bernalillo	.....	.....	.....	0.50
Bloomfield †	58	—11	23.0	1.09
Chama †.....	35	—19	24.8	4.97
Coolidge†.....	35	—17	15.0	.....
Dulce †.....	30	—29	17.2	1.12
Eddy	72	5	37.9	0.38
Embudo	.....	.....	.....	1.11
Estalina Springs†..	55*o*	— 3*o*	23.6*o*	2.24
Folsom†	70	—13	29.6	2.37
Fort Bayard	65	— 3	34.8	1.70
Fort Stanton.....	61	9	31.2	1.17
Fort Wingate.....	55	— 7	27.2	0.85
Gallinas Spring†...	66	2	29.6	4.01
Halls Peak†	60	—22	27.0	2.60
Hillsborough †.....	69	3	35.6	0.59
La Lus..\	73	17	43.4	0.78
Lordsburgh..	65	10	38.5	0.40
Los Lunas †.....	60	— 7	26.9	1.35
Monero †.....	53	—18	21.3	3.20
Olio†.....	60	— 4	25.2	1.57
Pojuaque	.....	.....	.....	0.69
Red Cañon †.....	68	1	34.1	0.60
Socorro †.....	70	7	38.9	1.05
Springer †.....	67	6	38.7	2.79
Taos†.....	54*d*	—13*d*	22.6*d*	2.26
Wallace†.....	60	3	32.8	0.30
New York.				
Adams Centre	.....	.....	.....	3.63
Addison.....	62	10	36.2	2.90
Afton	.....	.....	.....	5.07
Akron	.....	.....	.....	4.61
Albion	60	5	35.0	3.12
Alfred Centre.....	55	3	.....	3.60
Angelica †.....	57	5	33.1	3.84
Apulia	.....	.....	.....	4.39
Arcade(1).....	56	5	32.2	4.09
Arkwright	53	13	35.0	.....
Au Sable Forks....	.....	.....	.....	2.93
Avon	.....	.....	.....	3.90
Baldwinsville.....	60	7	36.6	4.10
Bedford	.....	.....	.....	5.90
Binghamton †.....	55	7	35.9	3.24
Bloods Depot.....	.....	.....	.....	3.76
Bolivar	.....	.....	.....	3.44
Boyds Corners*....	58	13	39.6	5.65
Brockport	58	8	36.3	4.04
Brookfield	57	2	33.2	5.60
Canton †	59	— 4	32.6	3.31
Carmel.....	59	8	38.4	5.14
Central Park, N. Y.	66	14	42.3	3.55
Chenango Forks ...	.....	.....	.....	3.17
Cherry Creek	.....	.....	.....	5.82
Constableville†....	47	— 3	30.4	5.39
Cooperstown	58	4	33.9	4.96
Davids Island.....	65	11	39.8	3.10
De Kalb Junction..	.....	.....	.....	3.31
Demster	.....	.....	.....	6.34
Deposit	.....	.....	.....	3.58
Dunkirk (1).....	58	16	37.1	.....
Dunkirk (2).....	.....	.....	.....	3.40
Easton	.....	.....	.....	4.82
Eden Centre	60	7	36.9	4.91
Factoryville†.....	60	9	35.8	3.54
Fleming	60	6	35.6	4.33
Fort Columbus	57	16	40.4	3.74
Fort Hamilton	60	14	39.4	4.86
Fort Niagara.....	60	13	38.0	2.90
Fort Porter.....	60	8	33.8	2.30
Fort Schuyler.....	60	13	40.0	3.90
Fort Wadsworth ..	68	11	41.6	3.77
Galway	.....	.....	.....	4.48
Geneva †.....	59	10	37.3	3.67
Glens Falls.....	53	5	32.8	4.34
Hammondsport....	60	8	36.1	3.17
Hess Road Station†	59	9	35.2	4.54
Honeymead Brook.	60	10	35.5	3.74
Humphrey †.....	55	7	35.1	4.38
Ithaca.....	61	7	39.1	3.85
Jamestown †*.....	58	13	36.3	.....
Kings Station.....	.....	.....	.....	4.96
Le Roy	56	8	34.1	3.84
Liberty	.....	.....	.....	3.91
Lockport	59	9	36.5	3.96
Lowville.....	.....	.....	30.5	4.75
Lyndonville	.....	.....	.....	3.74
Lyon Mountain(1).	48	— 9	28.6	.....
Lyon Mountain(2)	.....	.....	.....	3.10
McLean	.....	.....	.....	4.02
Madison Barracks .	60	2	36.0	3.47
Malone.....	58	— 7	31.0	3.18
Marshland	.....	.....	.....	3.64
Middletown	58	9	37.3	3.86
Minnewaska	58	4	33.7	3.25
Mount Morris.....	63	9	36.1	2.92
Newark Valley	.....	.....	.....	4.12
New Lisbon*.....	57	6	33.2	4.78
North Hammond*†	55	— 4	34.2	3.25
Number Four†.....	53	— 7	29.9	4.57
New York—Cont'd.	°	°	°	*Ins.*
Oxford	55	5	33.1	5.38
Palermo †.....	64	6	33.8	4.05
Pawling	.....	.....	.....	3.86
Perry City	57	7	33.8	4.48
Plattsburgh.....	53	— 2	33.4	2.58
Plattsburgh B'ks ..	54	— 3	33.8	2.88
Port Jervis.....	62	10	36.4	4.02
Potsdam	59	— 6	31.3	2.38
Poughkeepsie	61	9	38.2	3.59
Quaker Street.....	56	2	34.1	3.87
Rome	56	5	33.2	5.77
Romulus	62	6	36.2	3.48
Rondout	59	13	36.0	3.43
Saratoga	57	12	36.4	.....
Setauket †.....	62	14	40.8	3.40
Sherman	55	7	33.8	4.52
Schodack Depot ...	.....	.....	.....	3.59
South Canisteo.....	58	7	34.5	3.30
Southeast Reserv'r.	.....	.....	.....	5.51
South Kortright†..	57	3	34.1	4.57
Turin	53	— 3	30.8	7.00
Utica	60	4	34.6	6.77
Wappingers Falls..	.....	.....	.....	4.34
Watervleit Arsenal	61*o*	11*o*	37.7*o*	1.45
Watkins	61	12	37.0	3.23
Wedgwood.....	56	6	33.7	3.85
West Chazy.....	.....	.....	.....	2.50
West Point	64	6	37.3	5.03
White Plains *.....	56	15	40.3	6.76
Willets Point.....	61	10	41.3	3.70
North Carolina.				
Asheville†	66	15	43.7	3.25
Bakersville†.....	64	14	39.9	3.37
Bryson City†.....	.....	.....	.....	3.93
Chapel Hill †.....	74	19	46.8	1.47
Concord *f*	69	22	46.0	2.30
Douglas.....	70	13	41.5	2.70
Fayetteville †.....	.....	.....	.....	2.04
Hendersonville*†..	64	16	42.4	4.09
Highlands *h*.....	.....	14	.....	.....
Lenoir *.....	65	17	41.7	4.00
Lexington	67	18	45.2	2.21
Lillington †.....	.....	.....	.....	1.27
Linville †.....	60	3	35.6	7.37
Littleton †.....	71	21	47.4	0.53
Louisburgh †.....	70	14	45.1	2.17
Morganton * †.....	67	17	43.3	3.93
Mount Airy †.....	66	12	42.2	4.88
Mount Holly †.....	.....	.....	.....	0.79
Murphy†.....	.....	.....	.....	4.98
New Berne†.....	72	22	47.5	1.74
Oak Ridge †.....	69	18	44.2	2.96
Pittsborough	69	15	44.8	1.00
Salisbury	66	26	48.5	1.58
Saxon†.....	70	15	44.0	2.84
Smithfield	74	17	47.6	2.00
Southern Pines †...	73	15	47.6	1.26
Wadeville †.....	69	19	46.0	2.05
Weldon	74*j*	13*k*	45.6*j*	1.70
Willeyton	70	12	46.4	1.50
North Dakota.				
Bathgate†.....	41	—23	15.0	0.70
Carrington†.....	46	—28	16.4	.....
Ellendale†*.....	44	.....	20.7	0.70
Fargo †.....	44	—17	19.4*d*	0.43
Fort Buford	45	—17	19.6	0.35
Fort Pembina.....	50	—27	12.5	1.74
Fort Yates	46	—16	21.2	0.67
Gallatin * †.....	42	—32	.....	0.57
Grafton	41	—22	13.2	.....
Grand Forks.....	45	—21	12.4	1.29
Grand Rapids †.....	42	—27	16.2	3.32
Lakota†	40	—30	12.6	.....
Milton †.....	.....	.....	8.2*c*	1.00
Minot	42	—22	20.4	.....
Napoleon †.....	38	—25	15.0	1.76
Power †.....	45	—18	18.8	0.99
Saint Johns†	42	—20	14.2	3.11
Saint Thomas.....	42	—25	13.9	5.50
Valley City †.....	42	—24	10.5	.....
Wahpeton	45	—21	21.0	1.30
Wild Rice†.....	42	.....	16.8	0.78
Willow City †	42	—41	10.8	1.10
Woodbridge †.....	37	—37	8.4	0.44
Ohio.				
Akron.....	57	14	38.1	2.53
Ashland.....	59	16	37.5	3.23
Athens.....	64	13	40.0	2.09
Bangorville.....	58	12	37.6	3.07
Bellevue *.....	60	10	35.6	2.09
Bement	58	19	34.1	2.60
Caledonia†.....	.....	.....	.....	3.59
Canton†.....	60	18	38.2	2.37
Celina.....	64	19	41.6	1.97
Circleville(1)†.....	.....	.....	.....	1.33
Clarksville	63	15	39.9	2.22
Cleveland	62	19	39.0	2.23
Columbus Barracks	60	17	39.4	2.29
Dayton.....	62	16	40.7	2.30
Demos	58	12	39.4	2.83
Ellsworth	.....	.....	.....	2.08
Elyria	62	16	39.0	1.78
Findlay	61	13	37.5	2.15
Fostoria	61	15	38.4	1.97
Garrettsville	58	10	36.0	2.57

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Ohio—Con'd.	°	°	°	*Ins.*
Georgetown.....	65	18	42.1	3.08
Granville	58	14	37.8	2.58
Gratiot	60	17	39.4	2.08
Greenfield	60	10	38.0	2.47
Greenville.....	59	14	38.3	2.81
Hanging Rock	65	13	38.8	2.30
Harbor.....	60	18	38.2	1.71
Hiram	57	16	37.3	2.41
Jacksonborough ...	62	18	39.4	2.65
Kenton †.....	60	15	37.0	2.83
Logan	64	14	39.3	1.50
Lordstown.....	58	12	37.0	2.40
Mansfield †.....	.....	.....	.....	3.68
Marietta(1)†.....	.....	.....	.....	2.78
Marietta(2).....	65	18	40.7	2.86
Marion.....	59	9	37.6	3.36
McConnelsville....	65	13	37.8	1.69
Montpelier	58	14	34.8	1.93
Napoleon †.....	60	11	39.4	1.23
New Alexandria ...	58	12	40.1	3.05
New Comerstown..	59	13	37.6	2.66
New Holland	64	14	38.4	2.07
North Lewisburgh.	61	16	39.0	1.75
Oberlin	60	17	37.4	2.06
O. S. University ...	61	15	39.0	2.42
Orangeville	57	11	35.8	2.50
Piqua	62	.....	38.3	1.90
Pomeroy.....	64	14	39.5	1.51
Portsmouth (1)†...	.....	.....	.....	2.00
Portsmouth (2)....	66	17	41.5	2.00
Sidney †.....	.....	.....	.....	3.27
Springborough	.....	.....	.....	2.25
Tiffin †.....	62	12	38.4	2.15
Upper Sandusky...	60	17	39.1	2.40
Van Wert	59	9	36.0	2.09
Wapakoneta	60	16	38.0	1.03
Wauseon	59	9	35.5	1.91
Waverly	65	14	39.7	1.74
Waynesville	.....	.....	.....	2.77
Westerville.....	60	17	38.9	2.17
West Milton*.....	60	17	40.3	3.40
Weymouth	54	18	36.5	2.35
Wheeler †.....	.....	22	37.1	1.84
Wooster†.....	58	16	37.3	2.92
Youngstown	59	17	39.0	1.51
Zanesville †.....	.....	.....	.....	1.66
Oklahoma Ter.				
Fort Reno	70	11	44.8	1.70
Fort Sill	72	16	45.4	2.72
Guthrie*†.....	70	10	47.5	2.67
Oregon.				
Albany(1)†.....	58	30	41.0	13.19
Ashland (1).....	57	19	35.1	5.54
Aurora*.....	58	23	41.8	10.52
Bandon *.....	58	30	45.4	14.87
East Portland.....	59	26	.....	14.07
Eola.....	57	25	40.2	11.88
Junction City*	60	28	43.0	6.44
La Fayette *.....	56	20	38.1	13.25
Leland*	52	26	38.3	13.50
McMinnville (1)† ..	56	25	39.8	14.00
Monmouth*.....	54	24	41.2	12.04
Mount Angel†.....	60	26	41.4	10.41
Portland *.....	55	29	40.6	10.73
Riddles	58	22	37.3	9.71
Silverton	56	26	39.9	9.91
Springfield	63	26	39.3	10.55
West Fork.....	55	29	41.2	10.98
Pennsylvania.				
Allegheny Arsenal.	62	14	40.6	3.05
Altoona	65	6	44.0	2.96
Aqueduct *.....	60	15	38.8	4.55
Blooming Grove *..	58	14	37.6	5.60
Blue Knob.....	56	.....	31.7	2.00
Brookville †.....	.....	.....	.....	3.98
Browers Lock	.....	.....	.....	3.55
Carlisle	65	13	38.6	3.66
Clarion(1)†	.....	.....	.....	4.66
Coatesville	65	13	38.9	3.85
Confluence †.....	.....	.....	.....	4.06
Coopersburgh.....	62	14	39.8	4.83
Corry	55	4	34.2	4.56
Davis Island Dam†.	.....	.....	.....	3.02
Driftond	57	7	35.6	6.53
Doylestown.....	.....	.....	.....	4.29
Du Bois †	.....	.....	.....	4.88
Dyberry †.....	56	7	34.6	4.17
Easton.....	60	13	38.2	4.77
Edinborough*.....	58	8	34.2	.....
Emporium.....	58	8	36.7	4.96
F'ks of Neshaminy*b	.....	.....	42.2	4.88
Frankford Arsenal.	64	15	41.6	3.75
Frederick.....	.....	.....	.....	4.62
Freeport †	.....	.....	.....	3.45
Girardville.....	60	8	37.6	6.23
Grampian Hills....	56	4	34.8	5.15
Greensborough †....	.....	.....	.....	3.57
Hamburgh *c*.....	.....	.....	38.2	4.06
Hollidaysburgh....	60	8	38.7	3.89
Honesdale	57	10	35.1	3.53
Hulmeville	66	17	40.4	4.01
Huntingdon†.....	61	9	38.7	4.18
Johnstown†.....	61	10	38.8	3.85
Kane *e*	46	8	33.6	3.66
Kennett Square....	53	17	37.5	4.09
Pennsylvania—Con.	°	°	°	*Ins.*
Kilmer *.....	57	13	36.8	4.63
Lancaster*o*.....	.....	.....	41.8	.....
Lansdale	.....	.....	.....	3.41
Lebanon	62	14	38.7	4.34
Le Roy†.....	57	7	35.8	4.34
Ligonier	63	7	39.6	4.41
Lock Haven†.....	64	9	37.4	4.44
Lock No. 4†.....	.....	.....	.....	3.53
Mahoning †	.....	.....	.....	3.65
McConnellsburgh ..	64	12	39.8	5.62
Meadville.....	68	9	39.6	.....
Meshoppen	.....	.....	.....	2.50
New Castle†.....	58	12	40.3	2.62
Oil City†.....	.....	.....	.....	2.18
Ottsville	.....	.....	.....	5.37
Parkers Landing†..	.....	.....	.....	3.87
Philadelphia(1)...	.....	.....	.....	3.87
Philadelphia(2)....	66	17	43.3	4.26
Phœnixville	66	15	40.9	3.82
Pleasant Mount....	.....	.....	28.2	4.85
Point Pleasant.....	.....	.....	.....	4.86
Pottstown	65	16	40.7	4.08
Quakertown *g*.....	62	10	38.4	4.47
Reading†.....	.....	.....	39.3	3.61
Ridgway †.....	.....	.....	.....	4.51
Saegerstown	57	6	35.8	4.09
Salem Corners	59	4	32.8	4.22
Saltsburgh †	.....	.....	.....	4.68
Seisholtzville.....	.....	.....	.....	4.85
Selins Grove	63	11	39.6	3.97
Smiths Corners.....	.....	.....	.....	4.71
Somerset	63	— 3	35.0	4.69
South Eaton	58	11	37.6	3.88
State College.....	58	6	37.7	4.08
Stoyestown †.....	.....	.....	.....	3.02
Swarthmore.....	66	14	41.2	3.36
Uniontown.....	.....	.....	41.3	4.22
Warren †.....	.....	.....	.....	4.60
Wellsborough	60	8	34.6	4.01
West Chester	64	13	41.5	4.00
West Newton†.....	.....	.....	.....	3.59
Westtown	65	16	41.8	3.24
Wilkes Barre †.....	.....	.....	.....	4.38
Wysox	60	10	36.6	2.83
York	60	12	40.0	4.20
Rhode Island.				
Bristol.....	57	13	40.0	3.19
Fort Adams.....	64	13	42.6	2.54
Kingston(1).....	59	8	38.7	3.99
Kingston (2).....	65	7	39.4	3.73
Lonsdale	.....	.....	.....	4.57
Newport.....	62	12	42.4	.....
Olneyville	63	13	42.8	.....
Pawtucket	.....	.....	.....	3.77
Providence (1).....	62	12	40.8	4.25
Providence (2).....	62	10	39.9	4.15
Providence (3)	59	10	39.0	4.53
South Carolina.				
Belmont	70	21	48.0	2.20
Brewer Mine.....	71	27	48.2	0.93
Camden†.....	.....	.....	.....	1.47
Cheraw(1)†.....	.....	.....	.....	1.33
Cheraw(2)†.....	68	17	46.8	1.15
Conway	77	19	50.8	0.75
Effingham†.....	.....	.....	.....	1.76
Evergreen	68	24	46.8	2.82
Greenville†.....	.....	.....	.....	3.65
Nichols †.....	.....	.....	.....	0.91
Port Royal*†.....	72	31	54.6	1.67
Simpsonville	65	22	45.4	1.97
Society Hill †	73	24	48.8	0.05
Statesburgh†.....	73	23	50.6	1.82
Tillers Ferry †.....	.....	.....	.....	1.61
Trial	76	20	52.2	2.64
Walhalla	60	19	44.8	2.60
Wateree †.....	.....	.....	.....	2.56
Winnsborough†.....	72	22	49.8	2.49
Yorkville	69	24	49.2	2.00
South Dakota.				
Aberdeen †.....	39	—21	19.0	1.00
Alexandria.....	50*m*	—16	22.0*n*	1.72*l*
Britton†.....	40	—22	19.4	0.73
Brookings†.....	52	—21	24.7	2.30
Castlewood †.	50	—24	22.4	1.49
Clark†	48	—21	23.8	0.57
Cross *.....	60	— 3	30.0	0.25
De Smet †.....	.....	.....	22.4	1.37
Elkton*.....	46	—20	23.2	2.05
Flandreau †.....	57	—21	25.8	2.60
Forestburgh †.....	56	—16	26.8	1.07
Fort Meade	56	— 3	32.7	0.32
Fort Randall	61	—11	30.2	0.80
Fort Sully	52	—12	26.9	0.30
Frankfort	45	—24	22.6	1.30
Gary †.....	50	—15	24.4	0.89
Howard †.....	55	—20	26.6	1.55
Kimball †.....	56	—14	27.5	0.76
Millbank*†.....	54	—14	23.7	0.56
Mitchell †.....	63	—14	28.0	1.95
Oelrichs†	57	—10	27.3	1.19
Onida †.....	41	—11	19.0	0.51
Parker	59	—15	27.6	.....
Parkston*.....	54	—12	27.9	1.50
Saint Lawrence	58	—10	29.6	0.45
Sioux Falls †.....	55	—22	26.5	62.9

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
S. Dakota—Cont'd.	°	°	°	*Ins.*
Spearfish †	62	0	31.8	0.90
Tyndall †	62	—13	29.2	1.95
Watertown	48	—20	24.3	1.07
Webster †	51	—25	28.3	3.30
Wentworth	51	—18	24.6	2.08
Wessington Spr'gs†	55	—14	28.0	1.95
Wolsey*†	47	—21	22.3	0.75
Tennessee.				
Andersonville	60	16	42.0	3.60
Ashwood*†	63	25	46.1	4.52
Austin †	67	17	46.9	4.12
Bethel Springs*	68	30	50.0	4.19
Carthage	.....	.....	.....	2.49
Charleston †	.....	.....	.....	3.86
Clarksville	67	22	45.0	5.28
Clinton †	.....	.....	.....	5.58
Columbia †	.....	.....	.....	4.42
Covington (1) †	69	25	47.3	7.32
Dyersburgh (2) †	68	23	48.2	5.05
Fayetteville *	66	22	46.2	5.24
Florence Station* *f*.	65	24	45.6	4.87
Franklin *	65	23	44.9	4.05
Greeneville*	64	18	42.1	3.66
Jacksboro *	62	16	39.0	4.40
Jackson	60	19	.....	6.60
Johnsonville †	.....	.....	.....	2.89
Kingston (1) †	.....	.....	.....	4.85
Loudon †	.....	.....	.....	4.97
Lynnville*	66	23	45.1	4.92
McKenzie*	68	26	48.8	6.29
McMinnville*	70	23	47.8	4.25
Missionary Ridge*	.....	25	43.4	.....
Newport	68	20	42.2	3.06
Nunnelly *	66	21	46.1	5.28
Parksville*	66	19	44.7	2.74
Riddleton†	68	14	41.8	4.41
Rockwood †	.....	.....	.....	6.25
Rogersville*†	64	17	38.2	4.27
Rugby *	61	14	41.0	4.51
Savannah *	72	23	48.7	5.15
Sharp *	62	20	46.4	5.77
Springdale	62	14	41.9	4.50
Strawberry Plains†	.....	.....	.....	4.74
Union City*	69	24	46.1	3.53
Waynesborough	60	19	43.6	4.15
Texas.				
Arthur City †	.....	.....	.....	3.48
Austin (1) †	77	26	54.8	9.00?
Austin (2)*	75	24	53.6	.....
Austin (3)	78	20	52.4	10.31
Big Spring	.....	.....	.....	1.00
Brady †	77	18	48.7	4.43
Brazoria †	79	26	57.0	3.31
Brenham †	78	29	55.8	7.26
Brownwood †	76	18	48.2	5.29
Burnet*†	75	.....	49.0	7.86
Camp Eagle Pass	77	18	50.4	1.34
Childress †	78	9	43.9	1.00
College Station	79	27	55.0	9.24
Colorado (3)	.....	.....	.....	0.35
Columbia †	79	26	56.0	5.30
Corsicana (1)	77*g*	22*f*	50.2*g*	5.33
Corsicana (2) †	74	22	48.2	4.32
Cuero (2)	80	30	56.1	5.59
Durham	.....	.....	.....	1.45
Duval *	77	26	51.4	6.00
Fort Bliss	74	9	39.4	0.56
Fort Brown	82	35	62.0	3.11
Fort Clark	76	23	49.8	3.10
Fort Hancock	77	— 6	37.7	0.44
Fort McIntosh	85	27	57.4	0.33
Fredericksburgh* †	73	14	50.6	5.32
Gainesville †	73*j*	18*i*	48.3*j*	5.15
Gallinas †	81	18	53.4	6.17
Graham †	76	18	50.1	3.14
Grapevine †	75	21	49.0	5.18
Hallettsville*†	79	23	56.9	8.71
Hartley †	75	9	36.8	1.10
Haskell †	76	20	47.5	2.96
Haymond	.....	.....	.....	0.05
Highland	82	20	51.2	6.72
Houston †	74	25	53.8	5.29
Huntsville†	72	28	53.9	8.58
Llano †	77	23	56.2	3.28
Menardville* †	75	20	48.4	3.28
Mesquite †	78	20	50.5	3.64
Mountain Springs†	75	20	46.6	5.36
New Braunfels†	78	20	52.9	7.22
New Ulm	80	22	55.4	7.27
Ochiltree	.....	.....	.....	0.86
Odessa	.....	.....	.....	1.00
Panter *	76	21	47.9	5.01
Quanah †	74	18	43.5	1.50
Roby †	78	18	46.0	4.54
Round Rock †	78	20	54.4	7.33
San Antonio (1)	80	26	54.8	5.73
San Antonio (2)	80	25	55.1	5.55
Sierra Blanca (1) †	.....	11	.....	0.36
Silver Falls†	74	13	45.0	2.03
Sugar Land †	90	24	53.2	4.33
Temple †	75	22	49.5	6.75
Van Horn	.....	.....	.....	0.00
Venus †	78	19	47.8	5.66
Waco (2) †	76	21	50.8	5.35

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Utah.	°	°	°	*Ins.*
Blue Creek *	45	— 4	24.6	2.65
Fort Douglas	59	2	30.4	1.74
Fort Du Chesne	50	—16	20.2	1.06
Kelton*	53	—15	24.8	2.50
Moab	65	2	28.0	0.82
Park City	.....	.....	18.3*h*	4.90
Provo City † *g*	.....	.....	28.8	2.90
Terrace *	50	2	26.7	1.85
Vermont.				
Brattleborough (1).	58	8	35.3	4.95
Burlington†	55	0	34.8	2.23
Chelsea *	46	— 8	28.1	3.31
Cornwall	.....	.....	.....	1.95
Enosburgh Falls †.	54	— 4	31.8	4.02
Hartland†	56	2	31.2	5.34
Jacksonville	56	2	31.6	6.56
Lunenburgh	50	— 2	31.0	2.33
Saxtons River	54	7	33.3	5.10
Strafford *	48	— 2	31.2	3.50
Vernon *	54	8	34.6	3.89
Weathersfield C'tre	53	— 2	31.2	.....
Virginia.				
Abingdon †	.....	.....	.....	3.81
Ashland	.....	8	39.9	.....
Avon †	70	12	43.7	5.03
Bedford City†	65	20	42.8	4.04
Big Stone Gap†	66	14	37.8	4.82
Birdsnest *†	69	19	46.8	1.90
Blacksburg	64	18	41.5	2.87
Cape Charles *†	70	20	47.3	1.19
Charlottsville	70	13	43.9	1.29
Christiansburgh †	.....	.....	.....	3.91
Clarksville †	.....	.....	.....	1.69
Dale Enterprise †	70	12	41.5	2.43
Danville †	.....	.....	.....	1.85
Fort Monroe	72	15	45.6	1.53
Fort Myer	69	11	42.8	2.85
Lexington †	67	6	40.0	3.27
Marion †	68	13	38.9	3.65
Petersburgh †	71	11	43.8	1.20
Richmond †	75	7	47.2	1.67
Salem	70	20	45.5	3.98
Spottsville†	70	12	44.4	2.05
Stanardsville †	76	14	45.2	2.51
Staunton†	67	12	42.3	2.72
Woodstock †	.....	.....	.....	2.55
Washington.				
Aberdeen †	53	30	42.2	19.34
Chehalis †	54	25	39.8	11.32
Chelan	47	14	30.4	2.29
Coulee City	47	5	29.8	.....
Dayton	59	13	37.8	1.99
Doe Bay	58	29	42.3	9.37
East Sound †	61	30	41.4	6.92
Fort Canby	64	.....	.....	14.29
Fort Simcoe *	52	20	35.7	3.81
Fort Spokane	49	12	31.2	2.74
Fort Townsend	57	22	38.4	5.34
Fort Walla Walla	59	19	39.4	0.99
Madrone †	56	26	40.4	9.90
Pomeroy	50	17	35.8	2.23
Seattle	60	27	42.0	7.71
Tacoma †	58	24	40.6	10.55
Vancouver B'ks	53	26	40.9	9.70
Waterville	42	3	24.6	2.01
West Virginia.				
Alderson	63	20	44.3	2.73
Beverly †	68	10	40.9	3.75
Buckhannon (1) †	.....	.....	.....	4.56
Buckhannon (2) †	65	11	38.8	.....
Charleston†	.....	.....	.....	2.90
Elizabeth †	75*h*	14*e*	48.4*f*	3.38
Ella* †	58	14	39.6	3.25
Glenville †	68	13	40.6	3.88
Grafton †	64	12	39.2	3.40
Harpers Ferry †	.....	.....	.....	2.33
Hinton †	.....	.....	.....	2.51
Huntington †	67	16	40.4	1.96
Kingwood* †	63	12	40.0	5.02
Martinsburgh †	63	16	42.3	2.22
Moorefield	.....	.....	35.0*c*	1.55
Morgantown (1) †	.....	.....	.....	3.82
Morgantown (2) †	65	13	40.6	3.64
Nuttallburgh	71	.....	.....	.....
Parkersburgh†	69	16	40.8	2.68
Piedmont †	64	11	38.5	1.82
Pleasant Hill *	68	6	39.4	.....
Point Pleasant†	81?	16	44.2	2.79
Romney	60*f*	9*f*	42.4*f*	2.09
Rowlesburgh (1)	.....	.....	.....	5.93
Tannery*	65	8	41.5	.....
Weston †	.....	.....	.....	4.80
Wheeling (1) †	.....	.....	.....	2.80
Wheeling (2) *†	64	18	41.8	3.51
Wisconsin.				
Amherst	55	— 2	29.3	3.35
Appleton (1) †	50	0	30.4	3.57
Baraboo†	55	3	32.5	.....
Barron †	47	—23	24.1	4.52
Bayfield	55	—15	25.7	2.81
Beaver Dam	48	9	29.4	1.86
Beloit	53	4	31.6	2.12
Berlin	58	2	31.8	2.90
Black River Falls	53	— 3	27.2	3.66
Cadiz	50	2	28.1	3.17

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Wisconsin—Cont'd.	°	°	°	*Ins.*
Centralia	52	— 5	25.5	2.65
Chippewa Falls†	.....	.....	.....	3.38
Columbus	66	4	30.3	2.53
Crandon	42	— 9	22.3	0.57
Delavan †	54	8	30.8	2.24
Delavan (near)	50	4	29.8	1.42
Dodgeville†	52	0	28.4	3.25
Eau Claire (1)	52	—11	28.2	4.65
Embarrass* †	52	—15	28.9	5.15
Florence†	50	—11	26.8	3.91
Fond du Lac	51	3	31.6	2.41
Harvey †	53	6	31.4	2.56
Hayward	50	—21	22.8	3.35
Hillsborough	54	3	30.0	3.43
Honey Creek*	52	4	32.0	1.58
Janesville	55	6	33.6	2.00
Juneau †	50	4	30.9	2.01
Kenosha	56	8	36.0	1.72
Koepenick *†	50	0	26.7	2.60
Lancaster	52	— 1	28.4	2.62
Lincoln	.....	.....	33.4	5.75
Madison	57	5	31.1	2.24
Manitowoc	55	— 2	34.4	2.91
Mauston d	60	8	.....	1.37
Meadow Valley †	56	— 2	29.0	2.91
Medford (1) †	.....	.....	.....	5.06
Medford (2) †	53	—12	25.4	4.30
Menomonie	53	—17	27.2	5.33
Neillsville †	52	— 5	27.6	4.19
New Holstein	52	3	30.2	3.00
Oconomowoc †	53	4	31.6	1.99
Oconto	51	3	31.4	4.09
Osceola Mills†	52	—20	27.3	3.93
Oshkosh †	52	1	30.6	3.08
Pepin	56	— 8	27.3	4.41
Peshtigo	50	4	30.0	4.00
Phillips †	.....	.....	.....	1.88

Reports received too late to be used in general discussion of weather for December, 1891.

Alaska.				
Juneau	39	1	27.8	7.03
Arizona.				
Maricopa (1) *	90	32	56.0	0.00
Pantano*	68	25	42.6	0.30
San Simon*	81	18	43.7	0.52
California.				
Agnew	66	28	45.9	5.08
Anaheim*	76	36	52.8	1.44
Arcata	.....	.....	.....	11.38
Athlone*	62	27	45.5	4.19
Auburn	65	28	44.6	7.36
Bakersfield (1)*	68	38	47.9	0.18
Bakersfield (2)	69	12	41.8	1.08
Barstow †	70	15	43.6	0.25
Berendo *	68	29	44.7	3.47
Boca *	60	18	20.6	8.30
Borden*	68	26	43.7	2.97
Boulder Creek*	74	20	43.3	11.97
Brentwood*	66	25	44.6	3.34
Byron*	69	26	48.0	3.73
Caliente*	60	35	44.5	3.55
Calistoga*	68	27	48.3	8.56
Centreville *	67	.....	50.2	6.45
Cisco*	44	8	28.8	2.83
Claremont	73	26	48.8	1.66
Corning*	60	30	45.4	2.91
Crescent City	.....	.....	.....	12.56
Davisville	70	29	45.7	2.51
Downey*	80	26	54.1	1.97
Dunnigan*	68	36	52.7	3.18
Drytown	63	24	43.4	6.28
El Dorado *	65	25	44.2	9.09
El Casco*	70	16	45.3	0.00
Evergreen	.....	.....	.....	4.98
Farmington*	59	22	42.0	4.01
Felton *	78	22	45.8	14.08
Folsom * (1)	65	28	45.9	4.98
Folsom (2)	.....	.....	.....	4.54
Forestville †	70*d*	10*d*	39.0*d*	9.31
Fresno	81	34	56.4	3.08
Fruto*	68	32	45.3	4.00
Georgetown†	63	20	39.0	13.74
Goshen *	64	28	44.2	2.15
Grass Valley (1)	.....	.....	.....	10.26
Grass Valley (2)	58	17	36.8	9.37
Hollister*	71	24	47.6	4.09
Hornbrook*	50	7	33.9	4.55
Hydesville †	64	27	44.4	11.17
Indio *	88	22	54.6	0.25
Iowa Hill *	67	22	40.5	11.64
Jackson	69	14	42.0	8.03
Keeler *	60	18	38.5	0.31
King City *	68	23	43.6	2.40
Kingsburgh *	65	30	46.8	3.66
Knight's Landing*	72	27	46.7	2.64
La Grange	64	25	45.1	4.96
Lodi *	63	24	44.7	4.69
Los Angeles*	80	31	44.6	1.30
Los Gatos (2)	61	32	44.4	7.29
Martinez*	62	26	45.0	4.63
Merced *	65	25	46.6	2.99

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Milton (near)*	60	26	43.2	4.85
Modesto *	78	30	49.4	3.26
Mohave *	66	18	46.0	0.76
Napa City (1)	59	25	45.4	7.11
Napa City (2)*	62	27	42.8	4.96
National City	75	29	52.6	1.75
Needles †	75	22	49.9	T.
New Castle†	63	25	43.0	5.82
Newhall *	76	16	44.2	2.12
Newman *	70	28	51.8	3.69
Nicolaus	66	29	46.1	3.87
Niles *	68	30	45.7	6.09
Nordhoff†	84	17	47.5	2.58
Oakland (1)	74	30	48.7	6.64
Ogilby *	82	35	51.7	0.00
Oleta	62	22	41.0	9.29
Ontario	80	31	52.6	1.66
Orangevale†	62	21	42.5	4.42
Orland *	66	32	46.2	2.21
Palermo †	66	23	42.6	4.83
Placerville (1) *	64	22	41.5	12.57
Portersville *	71	30	46.4	3.38
Red Bluff	61	27	41.7	3.76
Redding (2) †	62	27	41.6	10.38
Redlands	.....	.....	.....	1.51
Riverside (1)	76	21	48.3	1.29
Rocklin *	65	29	49.1	4.19
Sacramento (1)	65	20	38.7	3.55
Sacramento (2) *	66	29	45.6	2.22
Sacramento (3)*	73	26	45.7	2.09
Saint Helena*	67	32	49.7	8.72
Salinas (1)	64*g*	25*h*	45.4*h*	2.32
San Ardo (2) †	70	18	44.8	3.36
San Bernardino †	74	23	47.8	1.67
San Gabriel *	76	26	51.3	1.67
San José *	63	31	48.2	5.84
San Miguel *	72	20	44.3	2.21
San Pedro*	74	38	53.4	1.22
Santa Barbara (1)	70	33	51.9	2.43
Santa Barbara (2)*	72	32	50.2	2.26
Santa Clara	63	28	.....	5.39
Santa Cruz (2)	69	25	47.7	7.60
Santa Margarita*	63	16	38.1	8.21
Saticoy	75	24	49.8	1.83
Selma*	64	28	43.5	2.63
Shasta Springs†	48	11	32.5	11.49
Shingle Springs*	68	25	47.0	7.58
Soledad *	64	22	45.5	3.10
Sonoma *	72*i*	28*i*	48.2*i*	8.01
South Vallejo*	69	32	51.3	3.89
Steeles	66	30	49.2	5.95
Stockton (1)	64	25	43.9	4.19
Stockton (2)*	65	26	47.4	4.58
Suisun City *	68	28	47.9	6.69
Susanville *†	43	— 1	28.1	4.91
Towles *	65	14	36.8	11.18
Tulare *	66	28	45.1	2.05
Turlock (2)	72	26	46.4	3.67
Upper Lake	67	20	41.0	7.35
Upper Mattole*	62	32	45.2	17.31
Vacaville (1)*	65	31	46.5	6.91

Reports received too late, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Ventura†	.....	.....	.....	1.75
Volta	70	24	45.5	3.02
Walla Walla Creek*	46	10	31.3	12.40
Walnut Creek	69	26	47.0	4.71
West Butte	70	22	46.0	2.47
Wheatland	66	23	43.6	3.14
Whittier*	79	38	53.7	1.50
Willow (1)†	69	26	42.8	2.54
Willow (2)*	68	30	43.1	3.59
Winchester†	86	18	53.8	0.96
Woodland	58	26	42.3	3.10
Yreka	59	10	31.6	3.92
Kansas.				
Hutchinson	72e	8e	41.1e	0.66e
Nebraska.				
Kimball	64	—1	30.0	0.15
Nevada.				
Austin	47	—7	25.0	4.31
Belleville	47	0	24.4	2.50
Belmont	49	—11	21.8	1.26
Carlin*	42	—30	19.9	4.42
Carson City	52	—4	29.1	5.43
Cranes Ranch	.....	.....	.....	3.79
Downeyville	58	2	32.8	0.20
Elko (1)	68	—24	19.6	5.70
Elko (near)	48	—33	25.8	5.46
Ely	60	0	24.4	2.30
Eureka	57	—5	25.8	1.70
Fenelon*	60	4	32.4	7.00
Genoa	59	0	28.3	8.46
Hawthorne (2)	64	0	32.5	1.53
Lewers Ranch	52	0	30.4	7.46
Mill City	52	—6	26.6	.....
Monitors Ranch	50	—22	20.8	1.63
Palisade*	62	—11	24.3	4.65
Palmetto	61	—12	20.5	3.00
Picche	60	—3	27.1	1.40
Reno State Univ'sy	52	—7	30.0	1.14
Saint Clair	58	—3	30.2	1.54
Stofiel	45	—27	11.7	3.04
Sunnyside	60	—5	23.6	0.53
Tecoma*	45	2	20.7	3.68
Toano	48	—12	21.1	7.86
Tybo	58	0	24.6	1.46
Verdi	54	—10	27.5	5.41
Virginia City	49	4	29.5	5.97
Wabuska	60	—12	24.8	0.48
Winnemucca*	66	0	29.0	1.09
Younts Ranch	64	15	42.3	0.40
New Mexico.				
Deming	67	9	38.4	0.18
Oregon.				
Albany (2)*	54	28	43.2	11.11
Arlington	53	22	38.0	1.83
Ashland (2)	61	18	36.2	5.30
Beulah†	52	—15	23.6	2.19
Brownsville*	64	28	45.9	10.20
Burns†	48	—20	21.2	1.69
Canyon City	62	2	33.8	3.03
Cascade Locks	55	30	41.5	21.50
Comstock*	60	28	40.1	16.25
Corvallis (1)	58	27	41.3	11.93

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Oregon—Cont'd.	°	°	°	*Ins.*
Corvallis (2)	56	26	40.0	11.40
Eugene	63	28	41.8	10.40
Forest Grove	54	26	40.0	14.11
Gardiner	58	30	45.2	17.60
Grants Pass† (1)	62	22	38.3	8.72
Grants Pass* (2)	65	25	37.5	7.20
Happy Valley	54	—8	27.9	1.94
Hardman	52	4	32.0	0.96
Hood River (near)	50	24	36.0	12.85
Hubbard	63	24	40.6	10.54
Jacksonville	61	17	37.2	7.69
John Day Junction	65	5	35.5	3.67
Joseph†	44	—4	23.4	2.03
La Grande†	51	1	29.6	2.80
Lakeview†	55	—11	24.7	6.38
Langlois	63	28	43.9	18.67
Lone Rock	.....	.....	34.5	1.05
McMinnville (2)*	58	24	38.4	12.02
Newberg	55	28	40.4	11.75
New Bridge	65	3	28.6	4.50
Newport	60	33	46.2	13.86
Pendleton	59	15	37.8	2.09
Piedmont	.....	.....	.....	10.11
Roseburgh*	68	30	44.5	10.77
Salem*	58	32	41.6	7.40
Sheridan*	54	28	38.5	11.37
Silver Lake	53	—11	25.5	1.46
Siskiyou*	40	16	29.8	15.65
Sparta	44	—1	24.1	4.39
The Dalles	53	23	36.6	4.14
Toledo	65	25	45.6	12.17
Vale	56	0	24.5	1.70
Vernonia	55	25	39.5	17.44
Weston	58	17	36.3	3.11
Texas.				
Camp P'na Colorado	73	1	37.9	0.70
Dallas (3)†	80	10	54.4	2.48
Kent	.....	.....	.....	0.65
Utah.				
Beaver	63	—12	25.6	1.50
Cisco	63	—6	25.5	1.45
Corinne*	42	—8	25.0	3.60
Deseret	60	—5	25.4	0.21
Green River	55	—7	30.4	0.15
Grouse Creek	.....	.....	.....	2.90
Lake Park	51	—7	27.2	1.49
Levan	.....	.....	21.5	2.80
Losee	62	—7	23.0	1.50
Mount Carmel*	57	—7	27.0	1.07
Nephi	43	—19	22.6	1.25
Ogden (1)	50	—4	26.7	3.90
Ogden (2)*	.....	.....	28.4	3.09
Parowan	57	—5	25.4	1.13
Promontory*	46	0	25.0	2.95
Richfield	59	—6	23.0	1.75
Saint George	71	8	36.0	0.40
Snowville	45	.4	26.0	2.68
Stockton	.....	.....	23.6	0.63
Washington.				
Lapush	58	16	42.4	15.11
Wyoming.				
Grandview	58	—10	25.0	1.00

Received too late for publication in November, 1891.

Stations.	Max.	Min.	Mean	Precip'n.
Alabama.				
Jasper	80	16	48.2	8.03
Arizona.				
Tempe	97	26	59.9	0.00
California.				
Riverside (2)	89	34	59.8	0.00
Florida.				
Homeland	81	39	66.3	0.50
Kansas.				
Weskan (2)	77	0	37.8	T.
Kentucky.				
Williamsburgh	.....	.....	.....	2.60
Nebraska.				
Fairfield	69	4	35.4	0.12
Geneva	.....	.....	.....	0.00
Oakdale	67	—6	30.3	0.31
North Dakota.				
Grafton	61	—21	17.6	0.10
Saint Thomas	60	—26	17.8	0.10

Reports received too late, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
South Dakota.	°	°	°	*Ins.*
Frankfort	64	—24	23.3	1.19
Tennessee.				
Harriman	71	16	45.0	6.41
Texas.				
Corsicana (1)	90	20	54.8	1.00
Luling	89	22	55.4	0.00
Panter*	87	19	54.0	2.40

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Washington.	°	°	°	*Ins.*
Dayton	70	16	43.8	1.84
Lapush	57	24	43.9	14.50
Wisconsin.				
Hayward	67	—27	19.9	0.80
Lancaster	56	—8	28.0	2.78
Dutch Guiana, S. A.				
Burnside Coronie	95	70	80.4	0.26

Letters of the alphabet denote the number of days missing from the record, thus: the letter *e* indicates three days missing, etc., etc.

*Extremes of temperature from observed readings.

† Weather Bureau instruments.

Corrections, November, 1891: "Aurora, Nevada," page 282, should read "Aurora, Oregon," page 283; "Verdi, Arizona," page 280, should read "Verdi, Nevada," page 282. October, 1891: Kansas, "Norton" should read "Horton."

Data from Canadian stations for the month of December, 1891.

Station.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches.*	*Inches.*	
Saint Johns, N. F.	29.75	29.90	.....	31.0	+ 0.6	2.69	.....	nw.
Sydney, N.S	29.88	29.94	+ .03	32.5	+ 3.5	3.25	— 1.47	sw.
Anticosti, Gulf of St. L.	.....	.....	.....	.....	.....	.....	.....	.....
Halifax, N. S.	29.89	30.03	+ .05	32.8	+ 4.3	4.06	— 1.23	sw.
Grand Manan, N. B	29.94	29.99	.....	34.5	.....	3.55	— 1.12	w.
Yarmouth, N. S.	29.96	30.04	+ .06	35.6	+ 4.1	5.63	+ 0.36	nw.
Saint Andrews, N. B.	29.94	29.99	.....	31.3	.....	2.86	— 0.70	nw.
Charlottetown, P. E. I.	29.91	29.95	.....	31.0	.....	3.14	— 0.86	w.
Chatham, N. B.	29.92	29.94	— .02	25.8	+ 9.3	2.24	— 0.73	w.
Father Point, Que.	29.90	29.93	— .04	25.9	+ 9.9	3.70	+ 1.48	sw.
Quebec, Que	29.66	30.00	.00	25.4	+ 9.4	2.51	— 1.80	w.
Montreal, Que	29.82	30.04	+ .02	29.1	+ 9.6	3.34	— 0.22	sw.
Rockliffe, Ont	29.48	29.96	— .06	25.6	+11.1	1.49	— 1.25	se.
Kingston, Ont	29.74	30.07	+ .02	33.6	+ 8.6	3.07	— 0.57	sw.
Toronto, Ont	29.68	30.08	+ .02	32.8	+ 4.8	2.87	+ 0.33	sw.
White River, Ont.	29.48	29.89	.....	21.8	.....	0.11	.....	s.
Port Stanley, Ont.	29.44	30.10	.....	33.8	.....	2.39	— 0.22	w.
Saugeen, Ont	29.30	30.04	+ .02	33.0	+ 6.0	2.65	— 1.48	s.
Parry Sound, Ont	29.29	30.01	— .02	30.9	+ 9.9	1.94	— 1.99	w.
Port Arthur, Ont	29.09	29.82	— .24	25.0	+14.5	2.68	+ 1.83	sw.
Winnipeg, Man	28.98	29.87	— .25	11.0	+ 8.0	1.01	— 0.18	s.
Minnedosa, Man	27.94	29.87	— .23	10.8	+ 8.3	0.56	— 0.42	nw.
Qu'Appelle, Assiniboia	27.48	29.89	— .23	12.4	+ 8.4	0.50	— 0.41	s.
Medicine Hat, Assiniboia	27.42	29.83	— .27	22.5	+ 7.5	0.36	+ 0.15	sw.
Swift Current, Assiniboia	27.18	29.90	— .22	17.6	+ 6.6	1.24	.....	w.
Calgary, Alberta	26.12	29.83	— .29	18.8	+ 4.3	0.46	.....	nw.
Prince Albert, Saskatch'n	28.20	29.94	.....	5.0	.....	0.19	.....	e.
Esquimalt, B. C.	29.84	29.87	— .15	39.9	— 3.8	12.58	— 1.62	se.
Stony Mountain, Man	.....	29.77	— .27	13.1	+10.0	.....	.....	n.
Port Moody, B. C	.....	29.81	+ .01	36.4	+ 2.0	18.07	+ 4.68	e.
St. Albans, Man.	28.54	.....	— .21	10.9	+ 2.6	0.79	+ 0.26	.....
Edmonton, Alberta	27.34	29.81	.....	16.6	.....	.....	.....	s.
Battleford, Saskatchewan	27.99	29.85	.....	7.9	.....	0.01	.....	se.
Grindstone, Gulf St. L.	.....	.....	.....	.....	.....	.....	.....	.....
Hamilton, Bermuda	30.10	30.26	.....	64.2	.....	0.99	.....	ne.

Table of miscellaneous meteorological data for December, 1891—Weather Bureau observations.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.									Humidity and precipitation.					Wind.						Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station.			
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01 or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Highest for month.	Year.	Lowest for month.	Year.
New England.						38.6	+ 6.5										3.60	— 0.1														
Eastport	53	19	29.95	30.01	+ .04	33.0	+ 5.7	52	5	39	7	17	27	22	24	72	2.99	— 1.3	11	8,717	nw.	47	nw.	30	4	16	11	6.7	33.0	1891	17.6	1890
Portland	99	20	29.95	30.06	+ .04	35.6	+ 8.0	56	10	42	8	17	29	25	26	72	4.17	+ 0.6	12	7,119	sw.	48	se.	4	14	6	11	5.1	37.0	1881	17.0	1890
Manchester	247	5	29.83	30.10	.....	30.0	.....	60	10	45	8	17	27	34	24	68	3.27	.....	11	4,799	nw.	33	nw.	30	16	4	11	4.9	36.0	1891	19.2	1890
Northfield	872	5	29.12	30.10	.....	30.6	.....	54	23	40	— 4	17	22	32	22	73	2.63	.....	11	7,924	s.	48	s.	4	6	11	14	6.4	30.6	1891	8.9	1890
Boston	125	22	29.97	30.11	+ .06	40.4	+ 7.7	64	23	48	11	17	33	23	28	67	3.58	+ 0.1	12	10,360	sw.	52	s.	30	14	7	10	4.7	40.4	1891	21.9	1876
Nantucket	14	6	30.13	30.14	.....	41.4	.....	56	9	47	14	18	36	19	36	78	3.14	.....	11	9,978	nw.	42	nw.	17	13	8	10	5.2	41.4	1891	31.1	1890
Woods Holl	22	14	.....	.....	.....	40.8	.....	57	4	47	14	17	34	24	.....	.....	3.68	+ 0.5	10	15.087	w.	63	se.	4	11	9	11	5.6	41.5	1881	28.0	1876
Vineyard Haven	.....	6	.....	.....	.....	43.8	.....	60	21	53	13	18	35	30	.....	.....	3.32	.....	11	.....	nw.	.....	.....	.....	13	6	12	.....	43.8	1891	31.9	1890
Block Island	27	12	30.12	30.15	+ .09	41.7	+ 4.5	59	24	47	12	18	36	22	36	80	2.81	— 1.1	11	14,975	nw.	60	w.	4	15	5	11	5.0	42.2	1881	31.4	1890
Narragansett Pier	22	10	.....	.....	.....	40.9	+ 8.1	57	*	50	8	*	32	32	.....	.....	3.98	0.0	9	.....	sw.	.....	.....	.....	17	6	7	.....	40.9	1891	29.0	1890
New Haven	107	20	30.02	30.14	+ .05	39.2	+ 6.7	60	23	47	11	18	31	28	30	73	3.74	+ 0.1	12	6,977	sw.	48	sw.	4	13	7	11	5.0	39.2	1891	20.3	1872
New London	47	21	30.09	30.14	+ .07	39.6	+ 5.1	58	23	47	10	18	32	25	31	74	3.74	+ 0.2	12	7,082	sw.	52	s.	30	11	12	8	5.0	40.0	1889	23.7	1872
Mid. Atlantic States.						43.5	+ 6.4										2.98	— 0.4														
Albany	85	18	30.04	30.14	+ .06	37.0	+ 6.7	61	4	44	8	17	30	27	30	82	3.23	+ 0.4	13	4,253	s.	48	se.	4	4	15	12	6.0	38.7	1881	17.2	1876
New York, N. Y	185	22	29.97	30.17	+ .07	41.8	+ 6.0	68	23	49	14	18	35	23	33	74	3.30	+ 0.1	10	10,082	sw.	53	nw.	30	10	12	9	5.2	41.8	1891	25.1	1876
Harrisburg	377	4	29.78	30.20	.....	39.8	.....	63	4	47	14	18	32	29	28	66	3.71	.....	10	5,181	nw.	54	se.	4	11	10	10	4.9	40.2	1889	29.4	1890
Philadelphia	117	21	30.08	30.21	+ .08	42.8	+ 6.0	66	23	51	15	18	35	23	31	69	3.78	+ 1.1	11	8,293	sw.	42	sw.	4	15	5	11	5.1	43.6	1889	25.1	1876
Atlantic City	53	19	30.16	30.21	+ .10	41.5	+ 4.7	56	4	48	15	18	34	25	34	79	3.19	— 0.7	9	9,260	sw.	48	nw.	30	15	7	9	4.2	43.6	1889	26.9	1876
New Brunswick	.....	.....	.....	.....	.....	40.3	.....	68	23	49	13	18	31	28	.....	.....	4.22	.....	8	.....	sw.	.....	.....	.....	7	15	9	.....	.....	.....	.....	.....
Baltimore	179	21	30.01	30.22	+ .08	43.7	+ 5.2	67	23	51	17	18	36	26	32	70	3.24	+ 0.1	9	5,766	nw.	40	nw.	16	15	8	8	4.2	46.0	1889	28.4	1876
Washington, D. C.	112	22	30.11	30.23	+ .07	43.2	+ 5.4	67	23	53	15	18	33	37	30	70	2.80	— 0.2	8	4,602	nw.	35	nw.	17	13	7	11	4.7	45.6	1889	26.5	1876
Cape Henry	.....	18	.....	.....	.....	48.4	+ 5.6	72	24	56	22	18	40	28	.....	.....	1.91	— 2.3	8	.....	s.	.....	.....	.....	16	7	8	.....	52.4	1889	34.1	1876
Lynchburgh	685	21	29.50	30.26	+ .10	44.3	+ 4.4	71	24	55	16	19	33	41	31	70	3.98	+ 0.4	9	2,991	nw.	24	se.	4	13	9	9	4.8	50.6	1889	29.9	1876
Norfolk	43	21	30.21	30.26	+ .12	48.5	+ 4.3	75	26	57	22	1	40	28	36	71	1.36	— 2.4	9	6,662	sw.	36	sw.	26	15	8	8	3.9	51.4	1889	33.2	1876
S. Atlantic States.						52.7	+ 3.8										1.86	— 2.5														
Charlotte	773	14	29.43	30.27	+ .10	46.7	+ 2.8	68	26	56	24	1	38	27	35	71	1.26	— 3.5	11	5,802	s.	36	w.	4	16	3	12	4.7	54.7	1889	38.1	1878
Hatteras	11	12	30.28	30.30	+ .16	52.8	+ 4.6	70	4	58	31	1	47	21	47	83	3.21	— 2.8	12	9,846	n.	56	nw.	30	16	7	8	4.2	54.6	1889	41.1	1880
Kitty Hawk	9	17	30.25	30.26	.....	49.4	+ 4.3	72	24	57	28	1	42	26	41	76	1.03	— 4.3	12	10,376	sw.	48	nw.	7	16	7	8	4.1	54.0	1889	36.3	1876
Raleigh	388	5	29.84	30.27	.....	47.8	.....	72	26	58	19	1	38	29	38	76	1.24	.....	8	4,935	sw.	32	sw.	4	14	7	10	4.3	53.4	1889	41.1	1887
Southport	34	17	30.24	30.27	.....	51.5	+ 4.3	69	23	59	22	1	44	26	47	86	1.15	— 2.2	8	6,008	ne.	36	s.	29	12	11	8	4.9	54.6	1889	39.5	1876
Wilmington	78	21	30.20	30.29	+ .13	53.1	+ 3.9	73	24	62	23	1	44	33	42	76	0.95	— 2.6	9	6,121	ne.	44	nw.	30	8	13	10	5.7	56.0	1889	38.6	1876
Charleston	52	21	30.23	30.28	+ .12	55.2	+ 3.3	73	*	62	29	1	48	26	47	81	1.62	— 2.0	12	6,085	ne.	30	ne.	18	7	15	9	5.5	60.0	1889	43.4	1876
Columbia	.....	5	.....	.....	.....	50.2	.....	73	26	62	19	1	38	35	.....	.....	1.92	.....	11	.....	se.	.....	.....	.....	17	1	13	.....	58.0	1889	45.9	1888
Augusta	209	20	30.07	30.31	+ .12	50.4	+ 0.9	73	26	60	22	1	40	36	41	79	2.76	— 0.9	11	3,498	ne.	26	sw.	4	9	10	12	5.5	57.4	1889	38.5	1876
Savannah	87	21	30.17	30.27	+ .09	55.4	+ 2.5	77	26	64	27	1	47	28	48	83	1.26	— 2.3	14	5,485	ne.	36	w.	4	7	14	10	5.6	59.8	1889	44.0	1876
Jacksonville	43	21	30.19	30.24	+ .08	59.6	+ 2.9	80	6	68	32	1	51	30	52	86	3.46	+ 0.3	11	5,373	n.	30	ne.	18	7	11	13	6.1	62.2	1879	48.4	1876
Florida Peninsula.						70.6	.....	86	4	76	51	20	65	21	66	88	1.45	.....	17	7,760	e.	25	ne.	8	1	20	10	6.6	70.6	1891	63.4	1888
Jupiter	28	4	30.16	30.19	.....	72.6	+ 2.3	83	4	76	62	1	69	13	66	82	1.21	— 0.7	8	7,998	ne.	35	n.	8	7	19	5	5.2	74.4	1879	64.7	1885
Key West	22	22	30.15	30.17	+ .05	67.2	.....	86	4	74	51	20	60	19	.....	.....	2.47	.....	10	.....	se.	.....	.....	.....	h2	h9	h12	.....	.....	.....	.....	.....
Micco	.....	.....	.....	.....	.....	65.8	.....	83	7	75	40	1	57	32	59	87	1.15	.....	8	3,427	ne.	14	sw.	16	7	15	9	5.8	.....	.....	.....	.....
Tampa	36	.....	30.17	30.21	.....	66.2	.....	82	*	72	48	28	61	22	61	87	3.90	.....	13	7,872	e.	45	ne.	18	10	10	11	5.7	66.2	1891	57.6	1888
Titusville	44	5	30.17	30.21	.....	72.7	+ 0.8										4.18	— 0.7														
Eastern Gulf States.						47.0	+ 1.2	65	6	54	25	1	40	27	37	72	3.68	— 1.3	12	7,474	se.	36	w.	24	11	5	15	5.6	57.2	1889	40.6	1878
Atlanta	1,131	14	29.05	30.28	+ .08	55.0	— 0.3	73	25	61	32	*	49	29	49	85	2.87	— 1.9	12	7,606	ne.	40	sw.	4	8	7	16	6.5	62.0	1889	50.5	*
Pensacola	56	13	30.16	30.22	+ .06	46.0	.....	71	14	58	19	1	35	40	.....	.....	4.07	.....	8	.....	e.	.....	.....	.....	8	5	18	.....	57.8	1889	41.4	1882
Auburn	.....	11	.....	.....	.....	53.4	+ 0.6	72	13	61	30	9	46	29	47	85	6.81	+ 2.3	15	5,473	n.	34	nw.	6	3	11	17	7.5	61.0	1889	43.8	1876
Mobile	35	21	30.18	30.22	+ .05	51.8	+ 1.3	75	14	61	28	1	43	34	43	78	4.61	— 0.4	13	4,194	ne.	24	se.	23	8	7	16	6.6	59.1	1889	41.4	1876
Montgomery	217	20	30.01	30.24	+ .06	50.4	.....	73	6	59	20	1	42	36	45	86	7.47	.....	11	4,744	se.	42	se.	3	7	8	16	6.3	.....	.....	.....	.....
Meridian	358	.....	29.84	30.24	.....	53.1	+ 2.8	72	5	61	28	27	45	30	42	74	3.17	— 2.0	8	6,557	se.	48	w.	23	12	3	16	5.4	63.6	1889	40.1	1876
Vicksburg	254	21	29.89	30.16	— .02	48.8	.....	71	14	59	21	27	39	32	.....	.....	3.89	.....	12	.....	se.	.....	.....	.....	6	23	2	.....	58.8	1889	42.1	1887
University	.....	5	.....	.....	.....	55.9	— 0.6	78	23	63	36	*	49	25	50	83	3.93	— 0.8	12	7,138	ne.	36	sw.	3	4	9	18	7.3	64.3	1889	47.8	1870
New Orleans	54	22	30.14	30.20	+ .06	60.2	.....	75	3	68	44	9	53	29	.....	.....	4.07	.....	7	.....	ne.	.....	.....	.....	1	9	21	.....	.....	.....	.....	.....
Port Eads	.....	.....	.....	.....	.....	51.6	+ 1.3										4.76	+ 1.1														
Western Gulf States.						50.9	+ 1.6	73	*	60	26	26	42	33	42	76	6.85	+ 1.9	10	6,856	s.	36	w.	3	12	6	13	5.3	63.2	1889	40.9	1876
Shreveport	249	21	29.87	30.13	— .03	46.0	+ 2.8	67	*	56	18	26	36	33	36	57	2.41	— 0.6	13	5,677	e.	25	w.	3	15	4	12	4.5	57.8	1889	36.1	1886
Fort Smith	492	10	29.60	30.13	— .03	47.6	+ 2.4	70	5	56	23	26	39	28	36	71	6.40	+ 2.1	8	5,313	s.	27	w.	3	12	6	13	5.4	59.1	1889	37.4	1886
Little Rock	309	13	29.81	30.15	— .02	58.8	.....	76	3	65	36	27	52	26	51	79	0.91	.....	6	8,674	se.	38	se.	31	6	13	12	6.4	68.4	1889	52.6	1887
Corpus Christi	20	5	30.12	30.14	.....	57.2	— 0.8	75	3	62	39	7	52	20	50	78	2.49	— 2.1	10	9,505	s.	40	nw.	23	9	6	16	6.5	66.4	1889	50.2	1876
Galveston	44	21	30.13	30.17	+ .03	52.2	+ 1.8	76	5	61	26	26	43	30	41	71	4.65	+ 1.1	8	6,217	nw.	32	w.	31	11	4	16	5.8	64.0	1889	45.1	1884
Palestine	511	10	29.59	30.15	— .02	55.1	+ 0.3	80	31	65	26	8	45	36	38	62	5.73	+ 4.0	10	5,938	se.	40	nw.	3	16	4	11	4.4	66.0	1889	49.0	1878
San Antonio	705	13	29.41	30.17	+ .02	52.1	+ 2.2										1.68	0.0														
Rio Grande Valley.						63.2	+ 2.4	81	3	72	38	26	55	29	57	87	3.11	+ 1.1	9	5,676	s.	30	n.	6	8	11	12	5.5	71.1	1889	55.2	1876
Brownsville	57	16	30.07	30.13	+ .01	61.0	+ 1.9	88	5	72	25	27	50	45	44	62	0.25	— 1.0	5	5,909	se.	30	nw.	23	11	5	15	5.9	71.2	1889	54.2	1887
Rio Grande City	170	14	29.91	30.09	— .01	43.7	+ 4.9										3.85	+ 0.2														
Ohio Val. & Tenn.						45.6	+ 1.8	64	6	55	21	1	36	31	35	74	5.38	+ 0.8	11	4,067	ne.	36	s.	24	9	11	11	5.3	57.2	1889	37.5	1880
Chattanooga	783	13	29.43	30.28	+ .09	43.6	+ 2.9	70	3	53	20	1	34	30	33	75	4.25	+ 0.1	9	3,211	ne.	30	s.	3	15	9	7	4.2	54.1	1889	29.2	1876
Knoxville	980	21	29.20	30.27	+ .07	49.2	+ 5.7	71	14	57	27	26	42	27	40	79	6.50	+ 2.7	9	6,407	se.	36	nw.	29	8	9	14	5.9	60.2	1889	32.4	1876
Memphis	330	21	29.82	30.19	+ .01	46.0	+ 3.8	67	3	54	22	1	38	29	34	69	4.26	+ 0.8	9	4,928	se.	34	se.	3	12	5	14	5.5	56.4	1889	30.2	1876
Nashville	553	22	29.60	30.20	+ .04	42.9	.....	65	3	51	18	18	35	29	30	68	2.82	.....	8	11,859	se.	54	sw.	5	14	6	11	4.6	50.2	1889	27.9	1872
Lexington	.....	9	29.09	.....	.....	46.5	.....	71	14	58	19	1	35	40	.....	.....	4.07	.....	8	.....	e.	.....	.....	.....	8	5	18	.....	57.8	1889	41.4	1882
Louisville	551	21	29.58	30.18	+ .01	44.6	+ 6.1	65	*	53	21	18	36	31	34	71	3.65	— 0.3	9	6,850	se.	37	sw.	4	12	8	11	5.5	51.6	1889	26.5	1876
Indianapolis	766	21	29.29	30.13	— .01	40.6	+ 7.1	61	3	48	20	27	33	27	30	73	2.96	— 0.4	12	6,099	se.	24	se.	3	13	7	11	4.9	46.7	1889	22.6	1876
Cincinnati	628	22	29.49	30.18	+ .02	42.0	+ 4.8	65	3	50	20	18	34	33	35	79	2.14	— 1.2	8	3,836	s.	30	w.	6	14	9	8	4.5	48.2	1889	25.2	1876
Columbus	837	14	29.25	30.18	+ .04	40.0	+ 5.8	60	15	48	20	28	32	33	29	70	2.42	— 0.7	11	6,676	s.	39	w.	4	8	11	12	5.9	44.6	1889	24.9	1880
Pittsburg	847	22	29.35	30.19	+ .06	42.1	+ 0.3	63	4	50	16	18	34	29	28	61	3.05	+ 0.3	12	5,118	sw.	28	nw.	4	10	8	13	5.6	45.6	1889	23.1	1876
Parkersburgh	638	4	29.52	30.23	.....	40.6	.....	65	3	51	16	*	30	35	32	76	2.51	.....	9	4,774	s.	30	nw.	4	14	6	11	4.7	47.2	1889	32.9	1890
Lower Lake Region.						37.2	+ 6.0										2.80	— 0.1														
Buffalo	690	22	29.32	30.08	+ .02	36.6	+ 6.1	63	4	43	10	17	30	29	29	73	4.24	+ 0.9	15	11,958	sw.	66	sw.	26	7	11	13	6.3	37.5	1889	19.4	1876
Oswego	335	22	29.72	30.10	+ .04	35.7	+ 6.3	61	4	42	7	17	30	28	27	74	4.09	+ 0.7	15	10,221	s.	40	nw.	16	5	7	19	7.5	37.2	1881	20.4	1890
Rochester	523	22	29.53	30.12	+ .06	36.2	+ 6.7	63	4	44	8	17	29	29	27	72	3.85	+ 1.1	16	7,551	sw.	42	sw.	26	13	5	13	5.6	36.6	1889	19.5	1876
Erie	714	19	29.32	30.10	+ .03	37.8	+ 4.3	60	15	44	17	*	31	24	29	72	3.27	— 0.1	17	11,515	sw.	48	se.	28	10	9	12	6.1	40.8	1889	22.1	1876
Cleveland	751	22	29.31	30.15	+ .06	39.0	+ 7.5	62	15	46	20	27	32	23	29	73	2.22	— 0.5	12	7,815	se.	38	se.	8	6	9	16	7.1	42.0	1889	19.8	1876
Sandusky	629	15	29.43	30.12	+ .02	39.0	+ 6.7	64	15	46	17	27	32	28	28	69	1.60	— 1.1	13	7,748	sw.	34	nw.	16	2	15	14	6.9	41.6	1889	24.4	1886
Toledo	674	21	29.39	30.13	+ .04	37.6	+ 6.1	59	15	45	16	18	30	25	28	73	1.49	— 1.0	12	9,369	sw.	40	sw.	4	15	6	10	5.0	41.4	1889	20.6	1872
Detroit	724	22	29.29	30.10	+ .02	35.6	+ 4.1	58	15	42	17	18	30	20	28	78	1.61	— 1.0	9	10,294	sw.	42	sw.	4	12	6	13	5.6	40.2	1881	18.3	1876
Upper Lake Region.						32.5	+ 7.2										2.41	+ 0.2														
Alpena	609	20	29.30	29.98	— .05	33.5	+ 8.5	53	22	40	11	17	27	30	26	81	2.96	+ 0.5	13	9,664	sw.	44	sw.	5	8	10	13	6.5	33.7	1877	15.1	1876
Escanaba	.....	21	.....	.....	.....	29.7	+ 7.7	54	12	36	6	30	23	24	.....	.....	3.36	+ 1.4	7	.....	sw.	.....	.....	.....	9	7	15	.....	33.5	1877	10.7	1872
Grand Haven	628	21	29.32	30.02	— .03	36.2	+ 6.2	58	3	42	17	18	31	27	29	76	1.85	— 0.8	10	11,111	sw.	51	sw.	4	6	12	13	6.3	41.7	1877	19.9	1872
Manistee	615	4	29.31	30.00	.....	34.6	.....	54	3	40	16	26	30	25	27	75	3.44	.....	13	9,111	sw.	44	sw.	4	9	11	11	5.2	34.8	1889	27.8	1890
Marquette	734	21	29.03	29.86	— .17	30.0	+ 6.7	55	12	36	8	30	24	26	23	77	2.58	+ 0.3	14	9,208	s.	39	sw.	8	8	8	15	6.5	35.0	1877	12.0	1872
Port Huron	639	18	29.39	30.10	+ .03	34.7	+ 6.4	56	15	41	16	8	29	23	25	72	1.98	— 0.4	12	11,330	s.	48	sw.	4	11	12	8	5.3	36.7	1877	17.6	1876
Sault de Ste. Marie	642	4	29.20	29.92	.....	29.8	.....	48	4	35	4	17	24	22	25	84	3.05	.....	16	8,655	se.	42	nw.	16	1	5	25	8.4	29.8	1891	19.0	1890
Chicago	824	21	29.14	30.06	— .02	35.4	+ 5.9	57	14	42	9	26	29	24	28	77	1.32	— 1.0	9	15,935	sw.	57	se.	1	11	9	11	5.2	42.8	1877	19.1	1872
Milwaukee	673	22	29.26	30.01	— .03	33.8	+ 7.5	55	15	40	7	27	28	27	25	75	1.46	— 0.6	9	10,190	sw.	44	nw.	4	9	11	11	5.4	37.3	1877	14.0	1876
Green Bay	617	6	29.27	29.96	.....	31.2	.....	50	3	37	0	27	25	24	24	79	3.68	.....	8	8,144	sw.	38	sw.	5	5	12	14	6.8	31.2	*	13.8	1886
Duluth	656	22	29.12	29.87	— .21	26.0	+ 8.9	54	12	34	— 8	27	20	29	22	83	3.76	+ 2.4	12	5,432	nw.	38	nw.	25	12	7	12	5.6	34.2	1877	4.9	1872
Extreme Northwest.						18.0	+ 7.2										0.86	+ 0.2														
Moorhead	935	11	28.83	29.91	— .24	18.2	+ 7.2	47	8	27	—20	26	10	32	14	88	1.07	+ 0.3	8	8,016	nw.	42	nw.	4	11	8	12	5.3	20.3	1881	—0.3	1886

Table of miscellaneous meteorological data for December, 1891—Weather Bureau observations—Continued.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.									Humidity and precipitation.					Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station.			
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Highest for month.	Year.	Lowest for month.	Year.
Rc. Northwest—Con.																															
Saint Vincent	804	12	28.96	29.89	— .26	13.2	+ 8.2	46	8	23	—27	26	4	36	7	80	1.79	+ 1.1	7	9,571	n.	48	n.	4	13	6	12	4.9	19.0	1890	-0.7	1886
Bismarck	1,698	18	28.02	29.94	— .20	19.6	+ 5.4	46	8	27	—22	26	12	28	14	81	0.44	— 0.3	5	7,355	nw.	42	nw.	4	14	12	5	4.3	29.1	1877	-1.2	1879
Fort Buford	1,899	13	27.80	29.94	— .23	21.1	+ 8.1	47	9	29	—15	25	13	37	12	72	0.14	— 0.5	5	5,146	w.	36	sw.	8	8	13	10	5.4	26.0	1890	-3.3	1879
Upper Miss. Valley.						36.3	+ 7.2										2.13	+ 0.1													
Minneapolis	.....	....	.....	.....	.....	30.0	.....	53	13	38	— 6	26	22	29	.....	.....	3.16	.....	10	.....	s.	....	.....	...	14	6	11	....	....	.....	....	.....
Red Wing	758	....	29.08	29.94	.....	29.0	.....	55	13	36	— 9	27	22	33	22	74	4.35	.....	11	8,244	w.	48	w.	4	11	11	9	5.0	....	.....	.....	.....
Saint Paul	850	21	28.97	29.94	— .17	27.6	+ 8.4	53	13	34	— 8	27	21	42	22	79	2.87	+ 1.6	11	4,973	se.	28	sw.	4	8	12	11	5.5	33.6	1877	8.2	1876
La Crosse	720	20	29.16	29.97	— .11	32.0	+ 8.0	70	3	40	— 2	26	24	33	24	73	3.27	+ 1.9	9	5,832	s.	30	sw.	4	10	10	11	5.5	39.2	1877	8.5	1872
Davenport	613	20	29.37	30.06	— .07	34.8	+ 6.8	57	14	42	5	26	28	27	26	76	1.64	— 0.1	10	7,747	sw.	42	sw.	4	14	9	8	4.7	42.5	1877	15.4	1876
Des Moines	869	14	29.04	29.99	— .16	34.6	+ 8.6	61	31	43	0	26	26	28	26	76	1.54	0.0	9	6,365	sw.	32	s.	21	14	12	5	4.1	39.6	1889	18.4	1884
Dubuque	651	19	29.28	30.01	— .10	33.0	+ 7.3	54	13	40	1	26	26	28	25	77	2.08	+ 0.2	9	4,704	s.	28	nw.	4	7	12	12	6.1	40.0	1877	13.7	1876
Keokuk	613	21	29.37	30.05	— .08	37.9	+ 8.1	62	14	46	6	7	30	29	28	73	1.33	— 0.8	6	5,851	s.	32	sw.	4	17	6	8	4.1	42.9	1877	18.8	1876
Cairo	359	21	29.77	30.10	+ .01	45.6	+ 6.1	66	14	53	22	26	38	30	36	73	3.49	+ 0.1	11	8,101	s.	52	s.	3	14	5	12	4.9	54.1	1889	27.3	1876
Springfield, Ill.	644	13	29.37	30.06	— .07	38.2	+ 4.9	62	14	46	12	26	30	30	30	77	1.59	— 1.2	9	9,024	s.	36	s.	28	13	9	9	5.0	44.4	1889	26.0	1880
Saint Louis	571	21	29.47	30.10	+ .05	42.8	+ 6.5	64	14	51	14	26	35	28	31	69	1.32	— 1.1	8	10,487	sw.	45	sw.	3	19	7	5	3.6	49.8	1889	24.9	1876
Missouri Valley.						32.1	+ 7.2										1.11	+ 0.5													
Columbia	.....	.....	.....	.....	.....	41.6	.....	65	14	53	11	26	30	34	.....	.....	1.04	.....	6	7,292	se.	36	s.	28	13	5	13	5.3	....	.....	.....	.....
Kansas City	963	4	28.98	30.05	.....	39.6	.....	64	31	49	10	26	31	31	28	70	1.54	.....	8	7,849	s.	33	w.	28	15	9	7	4.0	46.4	1889	35.9	1888
Springfield, Mo.	1,356	6	28.62	30.09	.....	42.1	.....	65	5	52	13	26	33	27	30	72	1.35	.....	8	9,393	se.	38	s.	3	14	6	11	5.1	51.8	1889	31.5	1887
Leavenworth	842	21	29.13	30.04	— .14	39.3	+ 6.3	64	31	48	10	26	30	28	28	70	1.71	+ 0.1	7	6,024	s.	28	nw.	28	13	10	8	5.2	45.3	1889	21.0	1872
Topeka	.....	5	.....	.....	.....	38.8	.....	66	2	50	7	26	27	34	.....	.....	1.63	.....	8	.....	s.	....	.....	....	9	18	4	....	45.1	1889	27.6	1887
Omaha	1,113	21	28.79	30.00	— .20	34.8	+ 7.8	60	31	42	2	26	27	27	24	70	2.07	+ 1.1	9	6,336	s.	30	nw.	4	10	13	8	5.2	39.4	1889	17.3	*
Crete	.....	5	.....	.....	.....	34.4	.....	66	2	45	— 1	26	24	31	.....	.....	1.78	.....	7	.....	nw.	....	.....	...	10	10	11	....	39.9	1889	23.0	1887
Valentine	2,613	7	27.17	30.01	.....	30.6	+ 5.4	60	9	40	— 8	26	21	39	20	73	0.42	— 0.2	3	8,314	sw.	40	nw.	24	11	14	6	4.9	35.6	1889	19.2	1886
Sioux City	1,158	....	28.68	29.96	.....	30.9	.....	60	8	40	— 6	26	22	34	22	75	2.48	.....	10	8,231	s.	42	nw.	4	13	9	9	4.6	....	.....	.....	.....
Pierre	1,470	....	28.32	29.97	.....	27.8	.....	56	1	36	—11	26	20	31	21	81	0.56	.....	3	5,711	nw.	36	nw.	24	13	7	11	5.0	....	.....	.....	.....
Huron	1,310	11	28.48	29.96	— .23	24.5	+ 6.3	55	12	34	—20	26	16	34	18	83	0.54	— 0.3	6	10,426	nw.	46	nw.	3	14	11	6	4.2	27.9	1881	8.6	1884
Yankton	1,232	19	28.60	29.98	— .19	31.2	+10.0	61	9	41	— 6	26	22	33	23	82	2.33	+ 1.6	8	7,161	nw.	35	nw.	25	12	7	12	5.1	34.4	1889	11.8	1884
Northern Slope.						26.8	+ 4.2										0.42	— 0.2													
Fort Assinaboine	2,690	12	26.97	29.85	— .30	27.6	+ 9.9	61	16	37	—20	25	18	39	15	65	0.08	— 0.6	5	11,875	sw.	60	nw.	27	8	15	8	5.7	33.0	1885	3.5	1884
Miles City	2,374	....	27.34	29.94	.....	28.9	.....	56	16	39	— 8	25	19	34	21	84	0.10	.....	3	4,403	s.	29	sw.	8	12	10	9	5.1	....	.....	.....	.....
Helena	4,118	12	25.68	30.04	— .13	28.5	+ 4.8	47	14	35	— 8	25	22	28	16	63	0.40	— 0.6	10	6,328	sw.	44	sw.	6	9	8	14	6.4	31.1	1885	7.0	1884
Rapid City	3,280	6	26.48	29.97	.....	32.3	.....	60	17	43	— 3	26	21	39	17	60	0.05	.....	3	7,918	w.	48	sw.	27	16	10	5	3.6	35.2	1889	25.2	1882
Cheyenne	6,105	21	23.87	30.00	— .17	28.3	— 1.2	56	9	38	— 2	25	19	37	12	59	0.56	+ 0.4	7	9,722	nw.	58	nw.	26	11	16	4	4.1	30.5	1889	18.8	1884
Fort McKinney	5,377	5	24.84	30.02	.....	28.0	.....	55	12	37	—13	25	19	38	20	74	0.41	.....	10	7,893	w.	60	se.	27	15	11	5	3.5	35.4	1889	23.3	1887
Lander	5,000	....	24.53	30.16	.....	21.5	.....	50	1	34	—25	25	9	46	8	66	0.56	.....	3	3,213	sw.	50	sw.	27	15	13	3	3.6	....	.....	.....	.....
North Platte	2,841	18	27.00	30.03	— .17	30.8	+ 3.1	59	1	42	— 9	26	19	43	19	74	0.69	0.0	8	6,419	nw.	37	nw.	3	8	13	10	5.6	37.2	1889	15.0	1879
Middle Slope.						35.5	+ 2.3										1.23	+ 0.5													
Denver	5,287	21	24.64	30.13	— .05	31.3	— 2.7	65	9	42	— 4	25	21	38	13	53	1.56	+ 0.9	8	5,922	s.	36	nw.	27	17	9	5	3.9	40.5	1889	22.6	1878
Pueblo	4,734	4	25.17	30.08	.....	32.0	.....	69	9	43	— 2	25	21	43	15	55	1.10	.....	8	6,976	nw.	60	n.	14	9	13	9	5.1	42.8	1889	36.7	1888
Concordia	1,410	7	28.49	30.05	.....	37.7	+ 5.2	68	1	48	3	26	28	35	26	76	1.20	+ 0.5	7	6,687	s.	36	s.	21	13	15	3	3.8	42.0	1889	24.2	1886
Dodge City	2,523	18	27.33	30.06	— .12	37.4	+ 4.3	69	2	49	3	25	26	41	21	66	0.85	+ 0.2	5	9,047	nw.	42	sw.	21	16	12	3	4.0	44.6	1889	21.0	1884
Wichita	1,366	....	28.55	30.05	.....	40.9	.....	66	2	50	9	26	32	31	27	69	1.12	.....	6	8,499	s.	38	s.	21	18	11	2	3.1	....	.....	.....	.....
Oklahoma City	1,239	....	28.74	30.09	.....	44.4	.....	74	31	54	14	26	35	32	32	70	2.65	.....	8	8,433	s.	36	se.	31	16	11	4	3.7	....	.....	.....	.....
Southern Slope.						40.0	— 1.6										1.92	+ 0.8													
Abilene	1,748	7	28.25	30.10	— .08	48.4	+ 1.7	75	28	58	22	7	39	37	33	65	2.60	+ 1.4	7	11,712	s.	48	sw.	31	15	13	3	3.3	59.6	1889	40.3	1887
Amarillo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Stanton	6,152	8	23.88	30.16	.....	31.7	— 5.0	62	1	43	10	25	20	40	11	48	1.23	+ 0.1	8	5,639	sw.	42	sw.	4	16	11	4	3.7	43.7	1889	29.9	1884
Southern Plateau.						40.3	— 5.9										0.65	— 0.1													
El Paso	3,796	14	26.24	30.09	— .10	41.6	— 3.5	72	1	54	8	8	29	45	7	34	0.50	— 0.1	4	6,387	nw.	40	n.	2	22	7	2	2.0	53.2	1889	40.2	1887
Santa Fé	7,026	19	23.19	30.16	— .04	25.6	— 7.1	52	1	34	— 1	7	17	31	11	59	1.53	+ 0.8	7	5,917	ne.	37	ne.	11	15	10	6	4.5	39.8	1889	25.6	1891
Tucson	2,432	9	27.55	30.14	.....	44.4	— 7.6	77	1	60	11	25	29	48	16	40	0.25	— 0.8	2	6,158	se.	40	sw.	31	18	9	4	3.0	52.9	1881	44.4	1891
Yuma	141	16	29.98	30.14	+ .08	51.3	— 6.0	77	1	65	25	25	38	38	21	38	0.05	— 0.5	1	5,425	n.	38	w.	20	25	5	1	1.5	60.2	1890	51.3	1891
Keeler	3,632	7	26.38	30.11	.....	38.8	— 5.2	63	1	48	17	25	29	29	18	47	0.31	0.0	3	6,819	n.	50	n.	11	15	7	9	4.2	45.4	1885	38.8	1891
Middle Plateau.						25.6	— 6.4										1.91	+ 0.7													
Carson City	.....	5	25.35	.....	.....	32.2	.....	60	*	43	0	31	21	37	20	65	5.62	.....	13	.....	.....	....	.....	...	15	5	11	4.6	38.5	1888	32.2	1891
Winnemucc	4,340	13	25.70	30.22	+ .01	26.4	— 6.6	52	*	35	— 8	25	18	43	16	69	1.74	+ 0.5	16	9,111	sw.	60	sw.	27	6	11	14	6.6	37.1	1886	26.4	1891
Salt Lake City	4,345	18	25.66	30.24	.00	28.6	— 5.9	51	1	36	0	25	22	25	19	72	2.19	+ 0.5	15	4,368	nw.	35	sw.	27	10	4	17	6.5	39.6	1889	26.9	1876
Montrose	5,795	7	24.24	30.20	.....	21.9	— 6.6	52	9	33	—17	25	11	46	13	78	1.81	+ 1.2	11	3,484	s.	38	s.	30	11	4	16	5.6	38.4	1889	20.8	1887
Northern Plateau.						36.4	+ 1.6										2.44	— 0.2													
Baker City	3,430	....	26.45	30.13	.....	24.4	.....	44	1	31	— 6	25	18	22	15	70	4.00	.....	17	4,567	se.	26	sw.	29	8	11	12	5.7	....	.....	.....	.....
Spokane	1,938	11	27.90	30.02	— .10	33.0	+ 2.2	46	1	38	15	25	28	19	27	79	3.04	+ 0.3	16	5,478	sw.	48	sw.	29	3	9	19	7.8	38.2	1890	15.5	1884
Walla Walla	1,018	7	28.93	30.04	.....	39.8	+ 0.8	59	12	46	20	24	34	26	30	74	1.83	— 0.7	12	6,350	s.	45	sw.	29	2	15	14	6.5	43.2	1890	32.0	1889
N. Pac. Coast Region.						42.0	— 0.3										14.79	+ 4.8													
Fort Canby	179	9	29.74	29.94	— .07	43.8	— 0.4	57	15	48	32	24	39	15	43	94	12.50	+ 1.6	28	15,347	se.	98	s.	7	2	5	24	8.1	47.5	1886	36.5	1884
Neah Bay	.....	7	.....	.....	.....	43.4	.....	58	*	50	28	24	36	20	.....	.....	23.91	+ 9.5	21	.....	sw.	....	.....	...	3	5	23	....	47.7	1886	34.4	1884
Olympia	44	15	29.90	29.95	— .09	40.2	— 0.8	56	16	44	24	24	36	15	38	91	13.61	+ 3.9	24	4,414	s.	32	sw.	29	0	11	20	8.4	44.6	1886	32.7	1884
Port Angeles	14	8	29.84	29.85	— .13	39.7	+ 1.7	58	16	46	28	24	34	19	35	92	8.95	+ 3.7	20	3,861	s.	40	sw.	7	1	12	18	7.7	41.0	1888	30.4	1884
Tatoosh Island	86	9	29.76	29.86	— .11	42.9	— 0.8	56	15	47	33	30	39	14	40	88	20.08	+ 6.4	28	15,031	e.	66	e.	29	4	4	23	8.1	47.8	1888	36.0	1884
Astoria	.....	7	.....	.....	.....	43.6	— 0.6	62	15	49	30	24	38	18	.....	.....	15.79	+ 4.9	28	.....	e.	....	.....	...	1	7	23	....	47.5	1886	40.7	1889
Portland	80	21	29.93	30.02	— .06	41.8	— 0.2	58	15	46	28	24	38	20	39	91	11.45	+ 3.2	27	5,562	s.	44	s.	7	1	11	19	8.2	47.8	1875	31.0	1884
Roseburgh	523	15	29.56	30.12	.00	42.0	— 1.3	66	15	47	27	24	37	22	37	85	12.02	+ 5.5	24	3,384	s.	36	s.	29	2	8	21	8.1	47.0	1886	37.4	1884
Mid. Pac. Coast Reg.						45.5	— 4.0										4.23	— 0.7													
Eureka	64	5	30.12	30.18	.....	45.4	.....	70	15	52	30	25	39	29	42	89	10.97	.....	25	5,223	se.	40	nw.	23	4	7	20	7.2	52.2	1888	45.4	1891
Red Bluff	342	15	29.87	30.22	+ .08	42.6	— 4.9	64	1	50	26	25	36	27	35	80	3.80	— 1.5	17	4,693	nw.	44	se.	29	11	8	12	5.5	50.0	1886	42.6	1891
Sacramento	64	15	30.14	30.21	+ .08	44.2	— 4.3	65	1	52	26	25	36	27	35	73	3.28	— 0.9	11	5,937	se.	34	se.	29	11	12	8	5.1	49.2	1886	43.2	1890
San Francisco	109	21	30.10	30.22	+ .10	49.6	— 2.7	64	11	54	37	25	45	17	41	76	5.62	+ 0.4	13	4,774	w.	34	sw.	3	14	7	10	5.0	53.5	1885	49.4	1879
Point Reyes Light	.....	....	.....	.....	.....	48.0	.....	64	15	54	34	*	42	21	.....	.....	6.80	.....	11	.....	nw.	....	.....	...	8	11	12	....	.....	.....	.....	.....
S. Pac. Coast Region.						52.5	— 5.6										1.04	— 1.8													
Fresno	338	5	29.84	30.22	.....	43.9	.....	66	1	52	27	25	35	27	36	76	3.99	.....	11	4,151	nw.	24	nw.	30	13	9	9	4.5	49.1	1889	43.8	1890
Los Angeles	330	15	29.78	30.14	+ .06	52.8	— 3.2	75	15	63	33	7	42	34	34	58	1.99	— 2.5	4	3,514	n.	28	n.	11	19	9	3	2.8	61.2	1890	51.9	1879
San Diego	93	21	30.05	30.15	+ .07	52.2	— 4.1	72	16	62	32	26	43	26	39	66	1.29	— 1.1	7	4,024	w.	30	s.	30	19	4	8	3.3	60.8	1890	52.2	1891

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.
*Two or more directions, dates, or years. †Received too late to be considered in departures, etc.

Form Map G--1891.

Chart I. Tracks of Areas of Low Pres

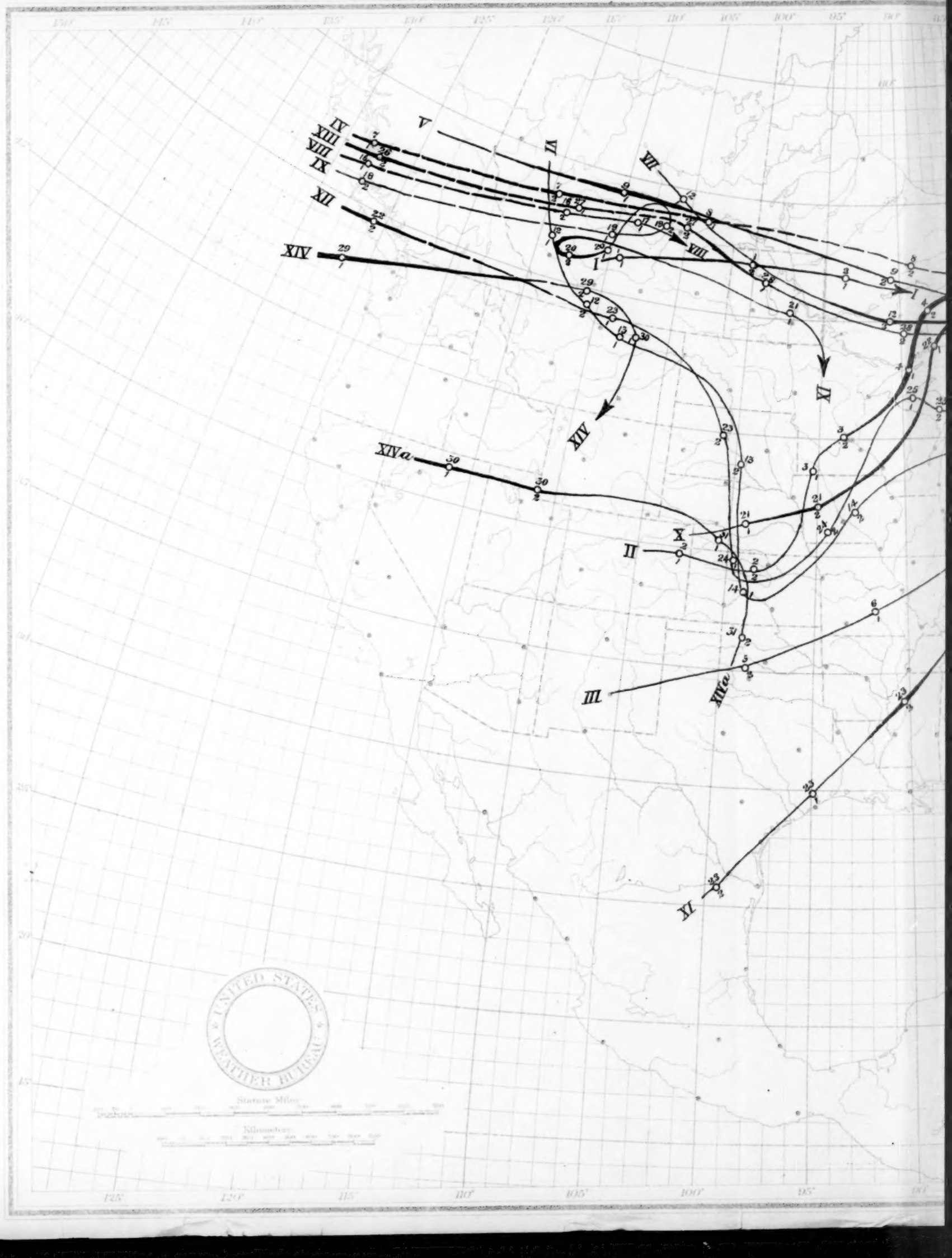
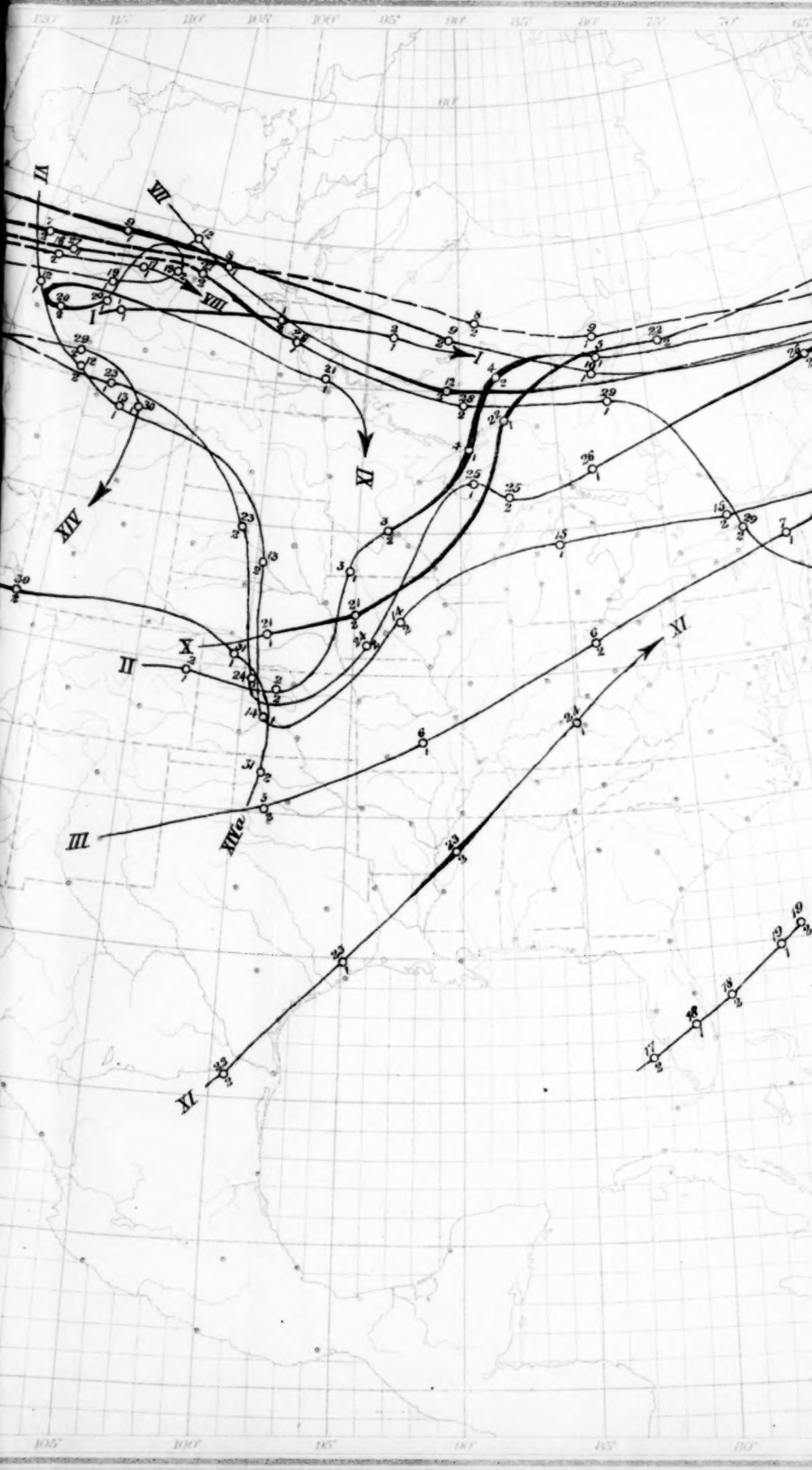
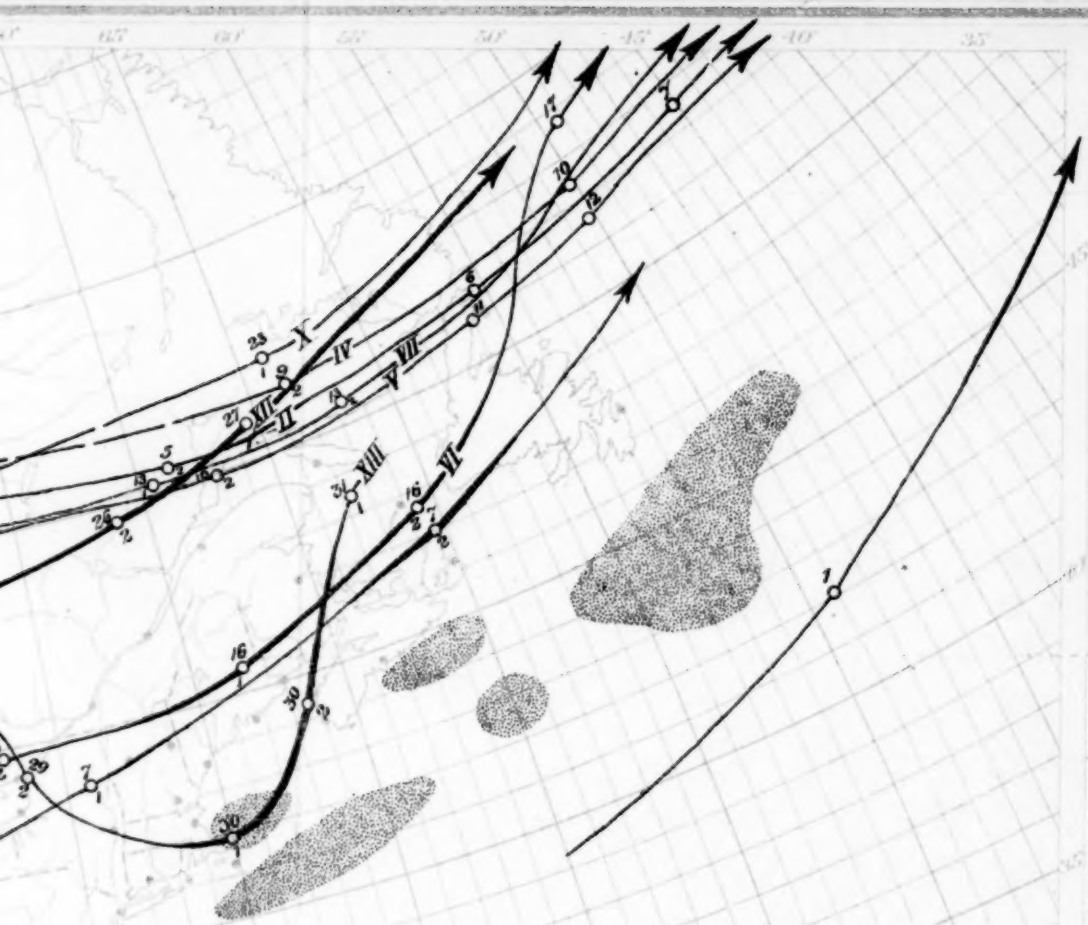


Chart I. Tracks of Areas of Low Pressure. December, 1891.

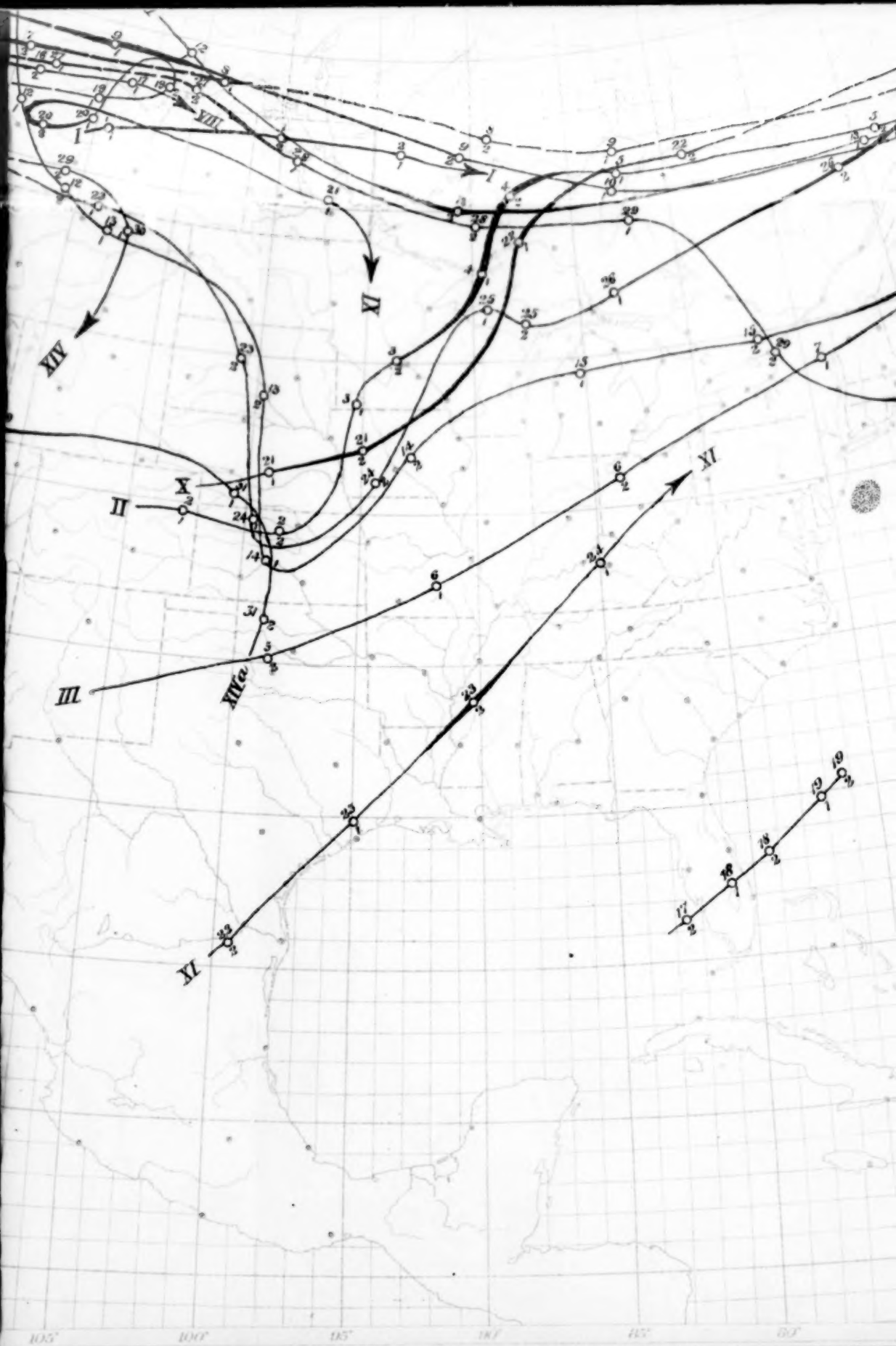


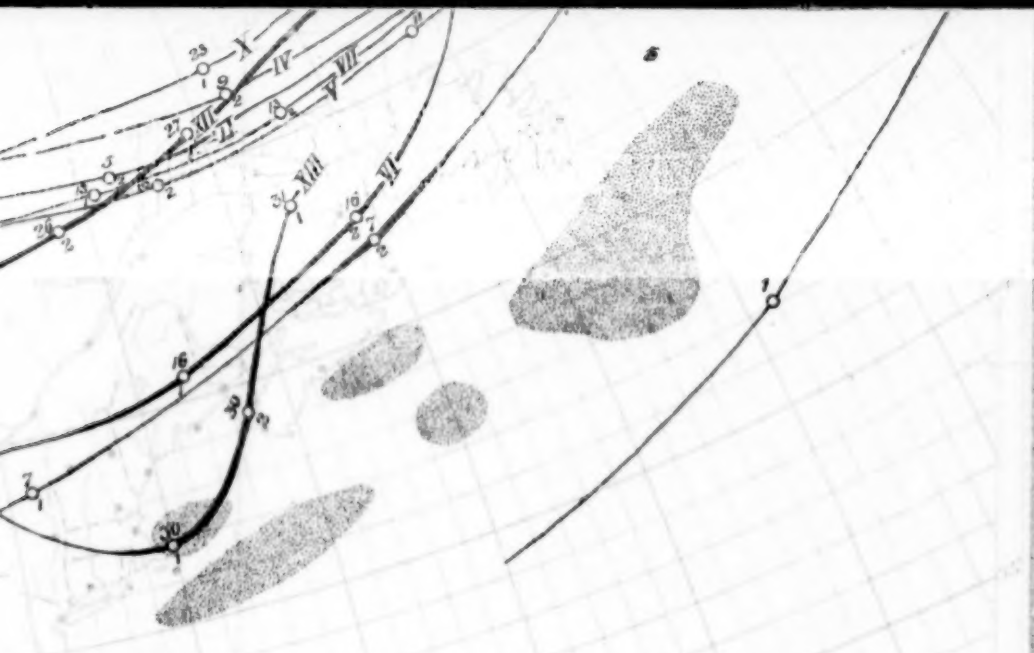


NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations. The heavy portion of tracks indicates where the greatest storm energy was displayed.

The dotted shading ( ) indicates fog belts.


I
VIII
XII
XI
II
X
III
XIIa
XI
XI
105°
100°
95°
90°
85°
80°

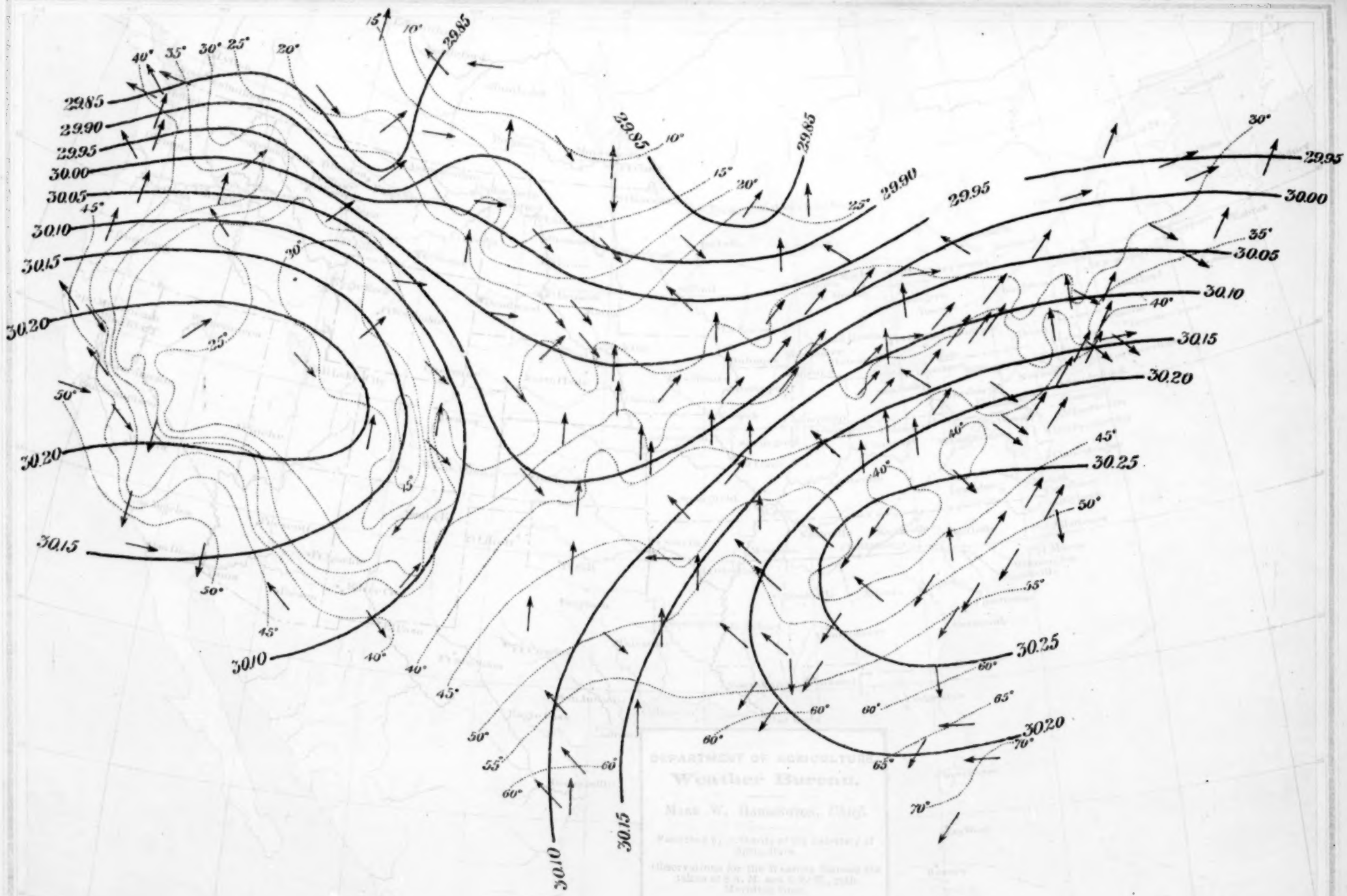


NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations. The heavy portion of tracks indicates where the greatest storm energy was displayed.

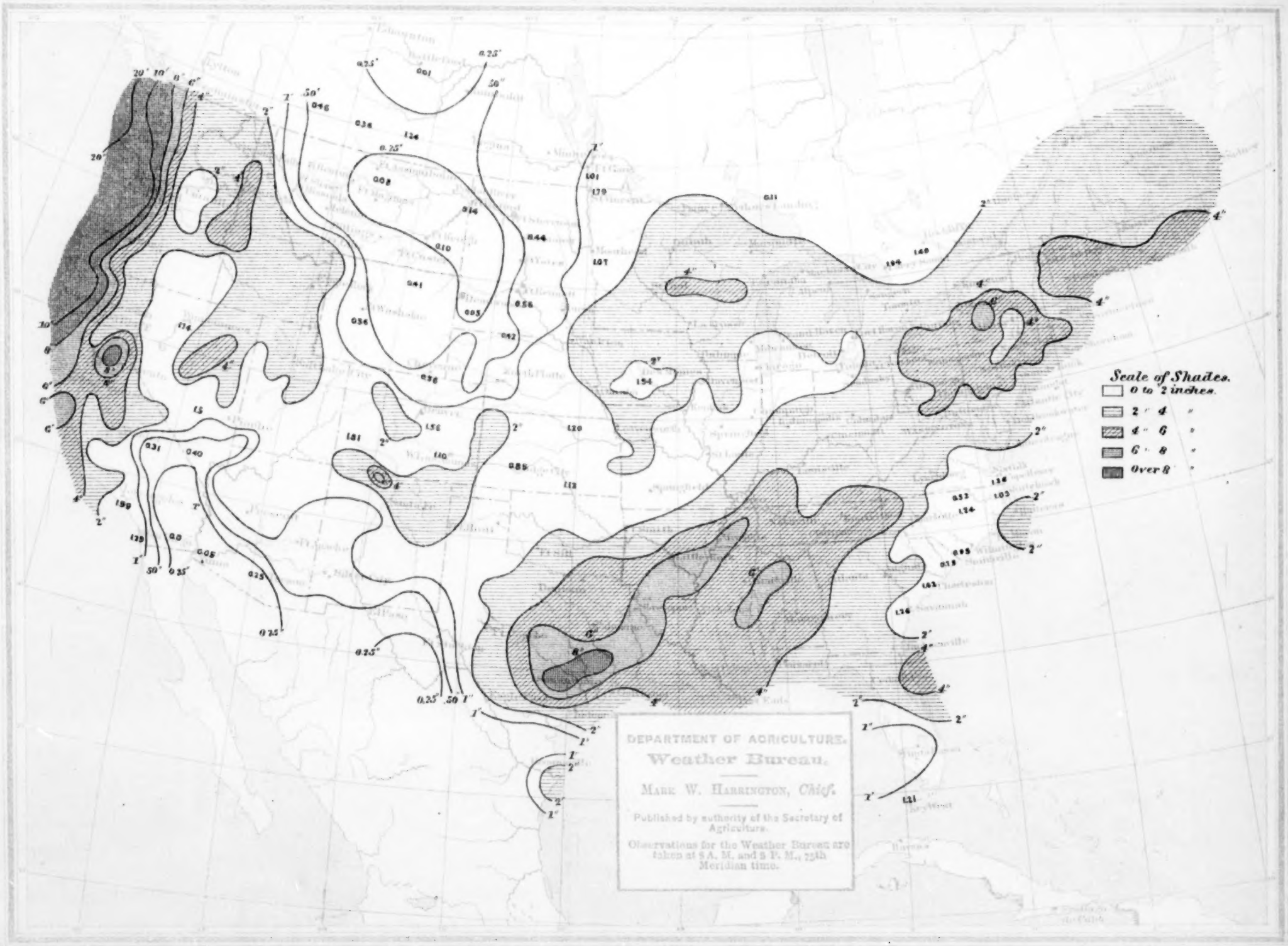
The dotted shading ( ) indicates fog belts.

Chart II. Isobars, Isotherms, and Winds. December, 1891.



Form 1001 F

Chart III. Precipitation, December, 1891.



DEPARTMENT OF AGRICULTURE.
Weather Bureau.

MARK W. HARRINGTON, *Chief.*

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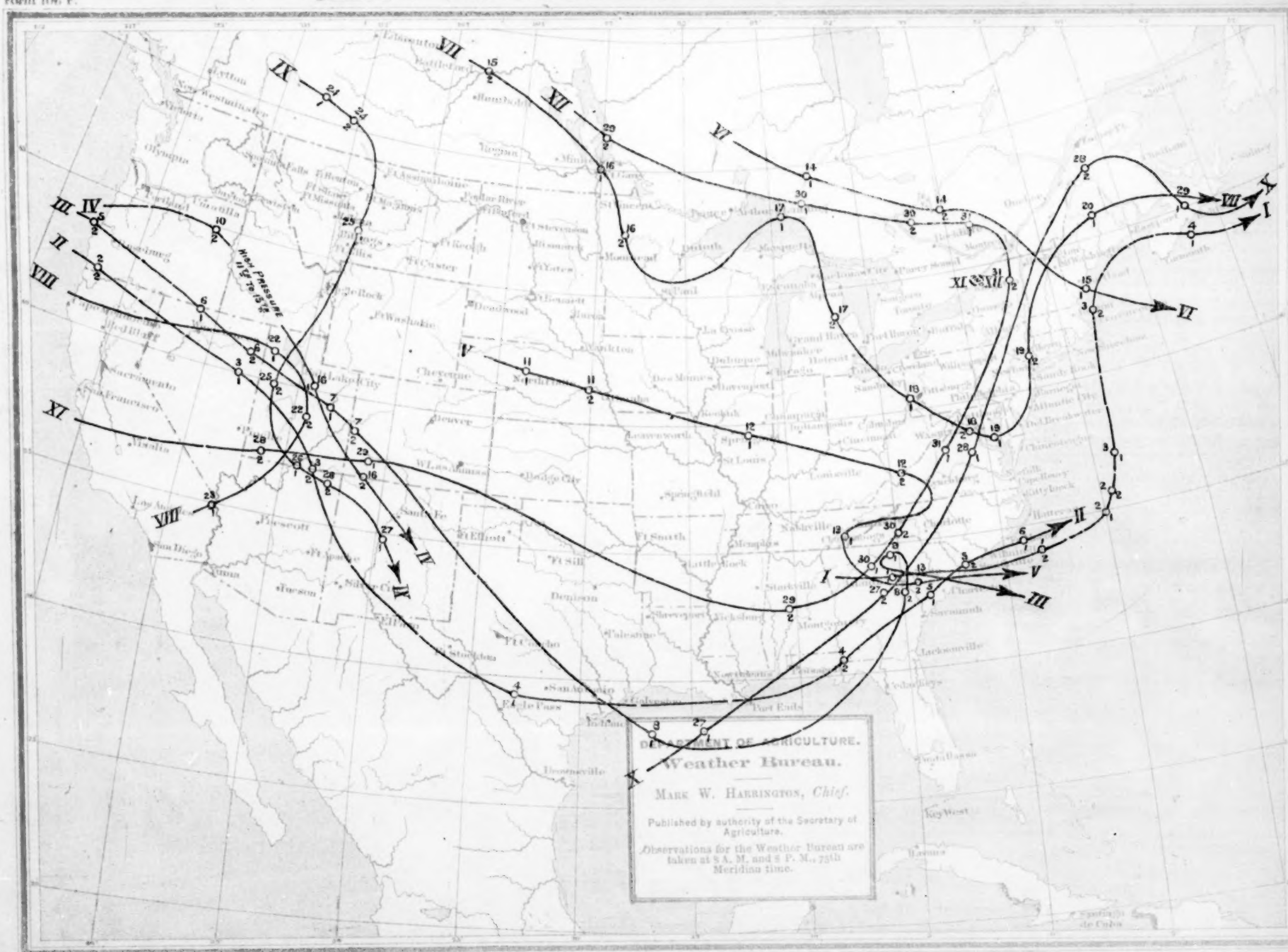
Form 1046 F.

Chart IV. Tracks of areas of High Pressure. December, 1891.


High Pressure 11 to 15
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Weather Bureau.
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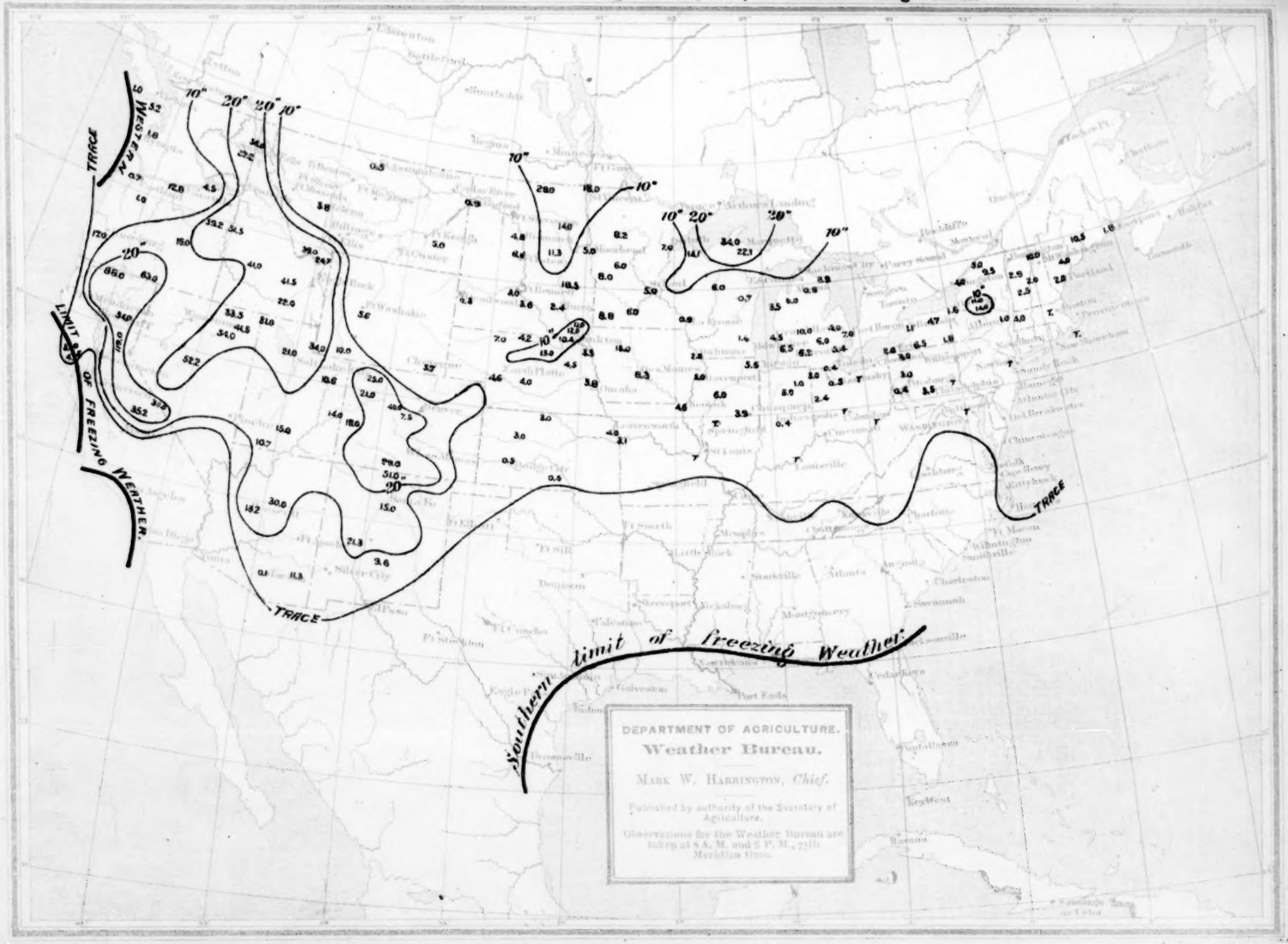
Form 106 F

Chart V. Depth of Snowfall (inches) during December, 1891, and Limits of Freezing Weather.


Northern limit of freezing weather.
TRACE
10"
20"
Southern limit of freezing Weather.
TRACE
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Form 106 F.

Chart VI. Depth of Snow (inches) reported on ground December 31, 1891.

0"
10"
20"
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Phœnix Ariz
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U G McWilliams
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E K Sykes
Calabasas Ariz
D D Ross (Chiracahua Mt)
Tombstone Ariz
Ed Vanderlip
Crittenden Ariz
T C Bain
Dos Cabezos Ariz
George F Cook
Dudleyville Ariz
C M Funston
Flagstaff Ariz
Dr R B Tripp (Eagle Pass)
Fort Thomas Ariz
Richard H Farley
(Farley's Camp)
Tip Top Ariz
A T Colton
Florence Ariz
Post Surgeon
Fort Apache Ariz
Post Surgeon
Fort Bowie Ariz
Post Surgeon
Fort Grant Ariz
Post Surgeon
Fort Huachuca Ariz
Dr M M Crocker
Fort Mohave Ariz
D Murphy
Gila Bend Ariz
E W Perkins
(Grand Central Mill)
Fairbank Ariz
D Rope
Holbrook Ariz
Mrs Alice F Cameron
Lochiel Ariz
J W Stump (Mt Huachuca)
Tombstone Ariz
Agent A & P R R
(Navajo Springs)
Holbrook Ariz
Frank Alkire
(New River)
Phœnix Ariz
Mrs E S Dodge
Oracle Ariz
George W Wells
(Oro) Clifton Ariz
G W Bonacker
Payson Ariz
Agent A & P R R
Peach Springs Ariz
Maj T W Hine
Phœnix Ariz
Dr Henry F Adams
Phœnix Ariz
Newton Barnes
Red Rock Ariz
W W Strohn
Reymert Ariz
Post Surgeon
San Carlos Ariz
G M Adams
Show Low Ariz
H Koshland
Signal Ariz
Walter G Scott
St Johns Ariz
D D Gowan
care F H Nash
Strawberry Ariz
L P Nash
Strawberry Ariz
C W Miller
Tempe Ariz
Miss Mary Tevis
Teviston Ariz
E L Wetmore
Tucson Ariz
S C Bogg
Tombstone Ariz
T B Carter
Walnut Grove Ariz
F W Heyne (Walnut Ranch)
Powers Ariz
Post Surgeon
Whipple Barracks
Prescott Ariz
C P Smith
Wilgus Ariz
G B Gardiner
Woodruff Ariz

Arkansas.

J P Whitehall
Arkansas City Ark
T J Warner
Black Rock Ark
A J Hahn
Brinkley Ark
R B Smith
Camden Ark
A P Robinson
Conway Ark
J W Walker
Corner Stone Ark
D H Hopkins
Dallas Ark
W A Verser
Devall Bluff Ark
Dr W B Johnson
El Dorado Ark
Prof G L Teller
Fayetteville Ark
J H Bard
Forrest City Ark
U G McLinden
Gaines Landing Ark
Prof R L Cowan
Harrisburgh Ark
A C Hull
Harrison Ark
A J Gaschen
Helena Ark
James M Butler
Hope Ark
Post Surgeon U S A
Hot Springs Ark
Silas C Turnbo
(Lead Hill Ark)
Protem Mo
M F Locke
Com of Agriculture
Little Rock Ark
F H Clark
Little Rock Ark
W H Pyburn
Lonoke Ark
Geo L Madding
Madding Ark
J E Coffer
Malvern Ark
Capt Joseph Evins
Mount Nebo Ark
R C McMann
Newport Ark
Alex Goodrich
Osceola Ark
W C Bill
Ozark Ark
Geo Bradley
Ozone Ark
E B Perkins
Paragould Ark
J E O'Connor
Pine Bluff Ark
Peter Hamilton
Rogers Ark
Dr E L Buerkle
Stuttgart Ark
M J Nash
Texarkana Ark
Dr A Dunlap
Winslow Ark

California.

H B Emerson
Agnew Cal
Post Surgeon
Alcatraz Island Cal
Dr A Fouch
Alvarado Cal
Post Surgeon
(Angel Island)
San Francisco Cal
D W Seaver
Arcata Cal
Chas L Fox
Arlington Heights
Riverside Cal
W A Webster
Bakersfield Cal
C C Ball
Barstow Cal
Post Surgeon
(Benicia Barracks)
Benicia Cal
Prof F Soule
Berkeley Cal
S E Gaskill
Campo Cal
Wm Barry (Centreville)
Niles Cal
E I Fuller
Colusa Cal
D S Sartwell
Crescent City Cal
S Holland
Evergreen Cal
J H Sturgis
Folsom Cal
D W Johnson
Forestville Cal
Post Surgeon
Fort Bidwell Cal
Post Surgeon
Fort Gaston
Hoopa Valley Cal
Post Surgeon
Fort Mason
San Francisco Cal
C M Fitzgerald
Georgetown Cal
B F Berriman
Grass Valley Cal
W J Loutyenheiser
Grass Valley Cal
E T Foss
Hydesville Cal
C F Macey
(Iowa Hill)
Iowa City Cal
Richard Webb
Jackson Cal
T T Tidball
Jolon Cal
W A Sickler
Julian Cal
Joseph Dominici
La Grange Cal
Ezra Fiske
Lodi Cal
F H McCullagh
Los Gatos Cal
J H Southwick
Milton Cal
Wm H Martin
Napa Cal
John Denair
Needles Cal
C H Kellogg
New Castle Cal
Alvah Pendleton
Nicolaus Cal
F B Spencer
Nordhoff Cal
Director Chabot Obs'y
Oakland Cal
Isaac Cooper
Oleta Cal
W H Edwards
(Orangevale)
Folsom Cal
G W Smith
Palermo Cal
R Rowland
Placerville Cal
Post Surgeon
Presido of San Fran
San Francisco Cal
L F Bassett
Redding Cal
The Citrograph
Redding Cal
C M Hammond
(Red Hill Ranch)
Upper Lake Cal
W E Keith
Riverside Cal
S H Gerrish 1517 G street
Sacramento Cal
Dr E K Abbott
Salinas Cal
Michael Gorman
San Ardo Cal
Dr A K Johnson
San Bernardino Cal
Post Surgeon
San Diego Barracks
San Diego Cal
Hugh D Vail
Santa Barbara Cal
A Block
Santa Clara Cal
W R Springer
Santa Cruz Cal
L E Blochman
Santa Maria Cal
Crane Bros
Saticoy Cal
E S Tomblin
Shasta Springs Cal
Robert Hall
Sonoma Cal
A T Mason (Steeles)
Edna Cal
B F Kettlewell
St Helena Cal
T G Brown
Stockton Cal
T B Sanders
Susanville Cal
J E Boal
(Sweetwater Dam)
National City Cal
C F Sonne
Truckee Cal
P R McCabe
Turlock Cal
W H Roscoe
Upper Mattole Cal
G O Coburn
Vacaville Cal
J F Newby
Ventura Cal
A Widmann
Volta Cal
I Titcomb
(Walla Walla Creek)
Fort Jones Cal
A L Bancroft
Walnut Creek Cal
A S Noyes
West Butte Cal
Wm Lumbard
Wheatland Cal
J M Case
Winchester Cal
A W Sehorn
Willow Cal

H B Ream
Yreka Cal

Colorado.

Miss M A Coles
Abbott Colo
Agent U P R R
Agate Colo
R G Taylor
Amherst Colo
C Duncan
Antonito Colo
Mrs I Rogers
Apishapa Colo
T F Burke
Arboles Colo
Agent U P R R
Aroya Colo
E L Hunkins
Aspen Colo
Amos Binford
Avoca Colo
W D Finney
Beaver Creek Colo
Agent U P R R
Bennet Colo
G E Lake
Boulder Colo
L A Rawlings
Box Elder Colo
J H Weller
Brandon Colo
Dr B A Arbogast
Breckenridge Colo
Rev G C Huntington
Brush Colo
J N Bean
Burlington Colo
Agent U P R R
Byers Colo
W B Felton
Canon City Colo
Hugh Taylor
Castle Rock Colo
Agent U P R R
First View via
Cheyenne Wells Colo
W J Brooker
Cheyenne Wells Colo
Wm R Abbott
Chivington Colo
G C Wortman
Climax Colo
Colorado College
Colorado Springs Colo
A Reichenecker
Como Colo
A A Williams
Cope Colo
C E McKenney
Crook Colo
G W Close
Cumbres Colo
Agent U P R R
Deer Trail Colo
Earl Whedon
Del Norte Colo
W O Stephens
Delta Colo
W S Miller
Denver Colo
S J Pratt
Dillon Colo
S W De Busk
Downing Colo
J W La Munyon
Dumont Colo
Christen Jensen
(East Dale Colo)
Costilla N Mex
Prof L G Carpenter
Fort Collins Colo
G H Birdsall
Fort Collins Colo
Post Surgeon
Fort Logan Colo

J H Berry
Fruita Colo
D D Bloom
Garnett Colo
J. Horace McClelland
(Gaynor)
Fort Collins Colo
P P Wheaton
Georgetown Colo
Gen W J Palmer
(Glen Eyrie)
Colorado Springs Colo
James Hitchings
Gold Hill Colo
C B Smith
Grand Junction Colo
J H Marshall
Greenhorn Colo
J M Hamilton
Granada Colo
O B Jennings
Grover Colo
W A Schliff
Gypsum Colo
Agent U P R R
Hugo Colo
E P Moon
Husted Colo
T H Stevens
Idaho Springs Colo
F H Hall
Jefferson Colo
B M Krumpanitzky
Julesburg Colo
Mrs N R Walters
Kirk Colo
Agent U P R R
Kit Carson Colo
J B O'Neil
La Junta Colo
G T Herbert
Lamar Colo
Chas J Gilkison
La Porte Colo
W E Culver
Las Animas Colo
H M Knight
Lavender Colo
A G Wallihan
Lay Colo
Chas Green
Le Roy Colo
John Johnson
Leslie Colo
John Pearce
Livermore Colo
Dr E J Clark
Longmont Colo
W H McCreery
Loveland Colo
Agent U P R R
Magnolia Colo
S J Perry
Manhattan Colo
Mrs I W Kenward
Meeker Colo
S F Kerr
(Middle Box Elder)
Fort Collins Colo
W M Stewart
Minneapolis Colo
C S Aldrich
Monte Vista Colo
A Cushman
Montrose Colo
Mrs M M Sprague
Moraine Colo
J M Wadsworth
Pagoda Colo
Miss Minnie L Barthel
Parachute Colo
Tom Swain
Paradox Colo
C W Raymond
Platoro Colo

H W Goodrich
Red Cliff Colo
G D Yokum
Rico Colo
Agent U P R R
River Bend Colo
J W Zepp
Robb Colo
F L Watrous
Rocky Ford Colo
C T Woods
Saint Cloud Colo
C Loman
(San Acacia)
San Luis Colo
G C Smith
Sanborn Colo
H H Griffin
(San Luis Ex Sta)
Monte Vista Colo
E C van Diest
San Luis Colo
J D Lucas
Sedgwick Colo
O A Rusk
Sheridan Lake Colo
F M Friend
Springfield Colo
Geo Polhill
Stamford Colo
Hon J M Crawford
Steamboat Springs Colo
Henry Kohler
(Surface Creek)
Delta Colo
G F Breninger
Table Rock Colo
W P Quaintance
Twin Lakes Colo
P Blumer
(Thon) Elizabeth Colo
J R Pickett (T S Ranch)
Whitewater Colo
J T Kirkman
Vilas Colo
Dr L T Durbin
Villa Grove Colo
T E Gibbons
Watervale Colo
R Z Mason
Ward District Colo
Agent U P R R
Watkins Colo
J S Newell
Windsor Colo
J W Dilts
Wray Colo
Ira Edwards
Yuma Colo

Connecticut.

H R Stevens (Birmingham)
Stevenson Conn
G J Case
Canton Conn
S P Willard
Colchester Conn
M H Dean
Falls Village Conn
Post Surgeon
Fort Trumbull
New London Conn
Rev S Hart
Hartford Conn
J H Tucker
Lebanon Conn
E A Bailey
Mansfield Conn
H D A Ward
Middletown Conn
R R Smith
New Hartford Conn
Rev Wm Goodwin
New Hartford Conn
J S Kirkham
Newington Conn

C H Truesdale
North Grosvenor Dale Conn
L H Healey
North Woodstock Conn
Willis Earle
Norwalk Conn
L Andrews
Southington Conn
K B Loomis
South Manchester Conn
Miss E D Larned
Thompson Conn
Rev E Dewhurst
Voluntown Conn
Mrs B F Harrison
Wallingford Conn
N J Welton
Waterbury Conn
S T Stockwell
West Simsbury Conn

District of Columbia

Post Surgeon
Washington Barracks
Washington D C
M F Burrows
cor 30th and M sts nw
Washington D C
Officer in Charge
Washington Aqueduct
Washington D C

Delaware.

John S Jester
Dover Del
Wm Carnagy
Kirkwood Del
H L Wallace
Seaford Del

Florida.

J Buzzell
(Amelia)
Fernandina Fla
A F Wyman
Archer Fla
Julian N Banta
De Land Fla
F G Brill
De Land Fla
H W O Margary
Eustis Fla
W Y Masters
(Flatwood) Eustis Fla
Post Surgeon
(Fort Barrancas)
Warrington Fla
A H Adams
Fort Meade Fla
John B Escott
Grasmere Fla
J S Wade
Homeland Fla
H D Pierce
Hypoluxo Fla
F Starr Gregory
Madison Fla
C V S Wilson
Manatee Fla
Rev J H White
(Merritts Id) Georgiana Fla
Miss A A Brickell
Miami Fla
Miss M M Gardner
Myers Fla
W S Jewett
Ocala Fla
Dr Geo E Walton
Orange City Fla
J H Neff
Pasadena Fla
J W Branan
Port Tampa Fla
Post Surgeon
(St Francis Barracks)
St Augustine Fla
Theodore G Maltby
St Petersburgh Fla

Paul R Gailmard
San Antonio Fla
Rev W H Carter
Tallahassee Fla
C D Webster
Tarpon Springs Fla

Georgia.

Prof L H Charbonnier
Athens Ga
Post Surgeon
Fort McPherson
Atlanta Ga
Prof D M Wade
Blakely Ga
Wm Kimzey
(Diamond)
Roy Ga
H A Roebuck
Elberton Ga
T G Scott
Forsyth Ga
C W Meaders
Gillsville Ga
R L Rhodes
Hephzibah Ga
J E Howland
Lithia Springs Ga
G W Warren
Louisville Ga
G S Owen
Marietta Ga
S A Cook
Milledgeville Ga
G F Meriwether
Monticello Ga
C M Witcher
Point Peter Ga
J F Wilson
Poulan Ga
J L Cutler
Quitman Ga

Idaho.

Frank Campbell
American Falls Idaho
Post Surgeon
Boise Barracks
Boise City Idaho
J W Cowden
Era Idaho
Post Surgeon Fort Sherman
Sherman Idaho
A H Soward
Garden Valley Idaho
D McLoughlin
Kootenai Idaho
J Sherwood
(Henry's Lake)
Lake Idaho
Dr F B Delano
Payette Idaho
Ferdinand Alers
Ruthburg Idaho

Illinois.

Dr M M Robbins
Aurora Ill
W Holden
Aurora Ill
L H Sullivan
Beason Ill
W P Halliday
(Pres't City Nat'l Bank)
Cairo Ill
Public Library
Cairo Ill
R O Purviance
Carlinsville Ill
J S Hallam
Centralia Ill
J B Dazey
Charleston Ill
C L Farrington
East Peoria Ill
L A Michels
Flora Ill

Post Surgeon
Fort Sheridan
Highwood Ill
J E Y Hanna
Golconda Ill
Prof M S Oudyn
Greenville Ill
Shirley E Gray
Griggsville Ill
A T Purviance
Hennepin Ill
Wm Rogan
(Irishtown) Carlyle Ill
J R Fulkerson
Jerseyville Ill
W J S Cathcart
(Jordans Grove)
Sparta Ill
Rev A C Price
Lacon Ill
C H Beeler
Lanark Ill
B A Jenkins
Louisville Ill
J B Sheapley
Martinsville Ill
Dr G Leibrock
Mascoutah Ill
J Withington
Mattoon Ill
W P Gibbs
McLeansborough Ill
C W Adams
New Haven Ill
C H Fahs
Olney Ill
V E Phillips
Olney Ill
J S Seeley
Oswego Ill
Dr J O Harris
Ottawa Ill
J E Templeton
Palestine Ill
J K Eberle
Pana Ill
Dr F Brendel
Peoria Ill
H A Burr
Philo Ill
J W James (Riley)
Marengo Ill
Henry B Clark
Rantoul Ill
T D Robertson
Rockford Ill
Post Surgeon
Rock Island Arsenal
Rock Island Ill
N T Veatch
Rushville Ill
S C Lincoln
Sandwich Ill
John Craig
Springfield Ill
R Dow
Sycamore Ill
P J Bates
White Hall Ill
F Osborne
Winnebago Ill

Indiana.

L Stealy
Angola Ind
C F Hole
Butlerville Ind
Dr N I Kithcart
Columbia City Ind
J A Perry
Columbus Ind
R Hessler
Connersville Ind
J P White
De Gonia Springs Ind
Higginbotham & Son
Delphi Ind
W J Davidson
Farmland Ind
D A Owen
Franklin Ind
O W Whitney
Hammond Ind
C R Kluger
Huntingburgh Ind
C F R Wappenhans
Indianapolis Ind
J C Loomis
Jeffersonville Ind
Prof H A Huston
La Fayette Ind
D E Prior
Logansport Ind
J M Johnson
Marengo Ind
Prof J L Massena
Marion Ind
E Kirkwood
Mauzy Ind
J C Black
Michigan City Ind
J M Lockwood
Mount Vernon Ind
Stephen & Durham
Muncie Ind
J F Hood
Point Isabel Ind
E Jones
Princeton Ind
Dr W N Wirt
Rockville Ind
J A Forsythe
Seymour Ind
S B Morris
Shelbyville Ind
Prof R G Gillum
Terre Haute Ind
Prof J N Roe
Valparaiso Ind
Prof C G Boerner
Vevay Ind
Dr W B Squire
Worthington Ind

Indian Territory.

Post Surgeon
Fort Supply Ind T
G H Heald
Healdton Ind T
Wm Noble
South McAlester Ind T

Iowa.

David E Hadden
Alta Iowa
H H Peterson
Alta Iowa
Conrad Schadt
Amana Iowa
J Rush Lincoln
Ames Iowa
Iowa Agricultural College
Ames Iowa
J W Love
Atlantic Iowa
H N Renfrew
Bancroft Iowa
H W Van Dike
Belle Plaine Iowa
James Rodgers
Blakeville Iowa
Prof C W Thompson
Blockton Iowa
Hon R R Vale
Bonaparte Iowa
Moses Simon
Carroll Iowa
Prof A C Page
Cedar Falls Iowa
H D Olds
Cedar Rapids Iowa
Dr J W Smith
Charles City Iowa
A S Van Sandt
Clarinda Iowa
Luke Roberts
Clinton Iowa
A A Berry
College Springs Iowa
J S Whitaker
Corydon Iowa
Jerome Smith
Corning Iowa
J W Bixby
Corning Iowa
Gregory Marshall
Cresco Iowa
Wm R Fox
Dallas Centre Iowa
Wm Ball
Delaware Iowa
A Voegeli
Denison Iowa
George M Chappell
Des Moines Iowa
C A Schaffter
Eagle Grove Iowa
G A Fairfield
Elkader Iowa
J Fred Clark
Fairfield Iowa
R Z Latimer
Fayette Iowa
W H Bridgeman
Fontanelle Iowa
Miss L A McCready
Fort Madison Iowa
Dr D W Farnsworth
Galva Iowa
Seth Dean
Glenwood Iowa
F L Williams
(Grand Meadow)
Postville Iowa
J G Culver
Greenfield Iowa
E E Strawn
Greenville Iowa
Prof S J Buck
Grinnell Iowa
Chas G Rogers
Grundy Centre Iowa
E C Grenelle
Hampton Iowa
J W Bopp
Hawk Eye Iowa
M T Ashley
Hopeville Iowa
Theodore Marks
Hopkinton Iowa
Emil F Wulfke
Independence Iowa
Albert L Arner
Iowa City Iowa
Prof John H Landes
Keosauqua Iowa
H B Strever
Larrabee Iowa
Mrs M B Stern
Logan Iowa
Dr A B Bowen
Maquoketa Iowa
Chas R Brown
Marshalltown Iowa
E E Wilcox
Mason City Iowa
George Price
(Maxon) Albia Iowa
Miss Ruby P Barr
McCausland Iowa
F G Thomas
Mooar Iowa
H D Smith
Monticello Iowa
G S Helphrey
Mt Pleasant Iowa
Dr Max E Witte
Mt Pleasant Iowa
Prof Alonzo Collin
Mt Vernon Iowa
A W Lewis
Murray Iowa
J P Walton
Muscatine Iowa
G D Pattingill
Osage Iowa
Jos Boyd
Oskaloosa Iowa
Wm J Wicks
Panama Iowa
W A Shaffer
Richland Iowa
Dr Caleb Brown
Sac City Iowa
G D White
Sanborn Iowa
A J Bond
Storm Lake Iowa
J M Rider
Tipton Iowa
T F McCune
Vinton Iowa
W A Cook
Washington Iowa
H G Grattan
Waukon Iowa
C M Trumbauer
Webster City Iowa
P Dorweiler
West Bend Iowa
Merton L Fuller
Williams Iowa
Will McKnight
Winterset Iowa

Kansas.

W P Gulick
Abilene Kans
J J Cass
Allison Kans
Wm Cheetham
Altoona Kans
Prof E B Knerr
Atchison Kans
A J Deihl
Belleville Kans
C S Culver
Bucklin Kans
Agent U P R R
Buffalo Park Kans
H E Faidley
Burr Oak Kans
A G Alrich
Cawker City Kans
J M Lobaugh
Coldwater Kans
J W Logan
Columbus Kans
Agent U P R R
Collyer Kans
H A Williams
Concordia Kans
E Shaw
Cunningham Kans
J B Handy
Downs Kans
Wm Taylor
Dwight Kans
C W Gilman
Elco Kans
Dr A C Williams
Elk Falls Kans
Agent U P R R
Ellis Kans
Prof T H Dinsmore Jr
Emporia Kans
C D Perry
Englewood Kans
Ben C Rich
Eureka Ranch
Ellis Kans
Post Surgeon
Fort Leavenworth Kans
Post Surgeon
Fort Riley Kans
Post Surgeon
Military Prison
Fort Leavenworth Kans
A C Abbott
Fort Scott Kans
Wm Featherstone
Globe Kans
Jesse Royer
Gove Kans
Agent U P R R
Grainfield Kans
R M Lawyer
Grenola Kans
Agent U P R R
Grinnell Kans
D C Ruth
Halstead Kans
L W Dennen
Havensville Kans
W S Belden
Horton Kans
C Bishir
Hutchison Kans
J M Altaffer
Independence Kans
Prof R Hay
Junction City Kans
Dr E R Heath
1115 Garfield Ave
Kansas City Kans
Jacob Wilson
Kellogg Kans
Wm F Smith
Kiowa Kans
Dr W M Goodwin
La Crosse Kans
Isaac S Coe
La Harpe Kans
F R French
Lakin Kans
C E Poling
Larned Kans
Prof F H Snow
Lawrence Kans
C B Jennings
Lebo Kans
J F Chambers
Leoti Kans
C P Blachley
Manhattan Kans
E H Kern
Mankato Kans
C M Breese Agric'l Col
Manhattan Kans
A C Abbott
Marmaton Kans
Agent U P R R
McAllaster Kans
Ed F Haberlein
McPherson Kans
C I Hinman
Medicine Lodge Kans
J L Steel
Minneapolis Kans
Agent U P R R
Monument Kans
R P Edgington
Morse Kans
John A Gordon
Morton Kans
H C Williams
New England Ranch
Grainfield Kans
Dr E M Turner
Norton Kans
Agent U P R R
Oakley Kans
Agent U P R R
Ogallah Kans
D Doyle
Oswego Kans
Miss Maud Adams
Page Kans
W T Jackson
(Pauline) P O Box 247
Topeka Kans

F T M Dutcher
Phillipsburg Kans
Agent U P R R
Plainville Kans
N A Andress
Pleasant Dale Kans
D M Adams
Rome Kans
A P Collins
Salina Kans
S P Kane
Scott City Kans
J W Goodell
Sedan Kans
Agent U P R R
Sharon Springs Kans
Dr S S Kaysbier
Seneca Kans
W H Harvey
Shields Kans
A A Denton
Sterling Kans
Prof J T Lovewell
Topeka Kans
T B Jennings
Topeka Kans
J W Tipton
Toronto Kans
C E Wightman
Tribune Kans
T W Marshall
Ulysses Kans
Agent U P R R
Wa Keeney Kans
W P Cochran
Wakefield Kans
Agent U P R R
Wallace Kans
Agent U P R R
Weskan Kans
S D Yoxall
Weskan Kans
Agent U P R R
Winona Kans

Kentucky.

M H Crump
Bowling Green Ky
H B Bonar
Caddo Ky
C H Major
Canton Ky
W E Fowler
Central City Ky
J B Atkinson
Earlington Ky
Miss Lee Ray
Edmonton Ky
Commanding Officer
Fort Thomas Newport Ky
T W MacGill
Franklin Ky
Dr F L Harrod
Harrodsburgh Ky
Frank Burke
Louisville Ky
A H Martine
Middlesborough Ky
Post Surgeon
Newport Barracks
Newport Ky
Oscar Haynes
Pellville Ky
Wm Martindell
Princeton Ky
Prof O H Kennedy
Richmond Ky
H W Preissler
Shelbyville Ky
A B Gilbert
South Fork Ky

Louisiana.

Dr C J Edwards
Abbeville La
Miss Grace Manard
Amite City La
Prof W C Stubbs
Sugar Ex Station
(Audubon Park)
New Orleans La
Prof H A Morgan
Baton Rouge La
Dr L D Chauff
Bonnet Carre La
Hon S P Henry
Cameron La
W W Wall
Cheneyville La
J A White Jr
Clinton La
Dr W V Taylor
Davis La
Prof G Williamson
Grand Cane La
L D Martin
Edgard La
Paul Leche
Donaldsonville La
Rev Joseph A Raby S J
Grand Coteau La
D W Harris
Homer La
A F Chanfrau
Houma La
G W Whitworth
Jeanerette La
J J Davidson
La Fayette La
Dr Wm Meyer
Lake Charles La
A Werner
Lawrence La
Dr E A Crawford
Liberty Hill La
M R Bein
Luling La
Alex Band
Mandeville La
Hon L Molenar
Marksville La
R Benefield
Maurepas La
W S Hunter
Minden La
James S Cosgrove
Natchitoches La
Mrs J A Gebert
New Iberia La
G E Hunt
New Orleans La
Post Surgeon
Jackson Barracks
New Orleans La
J G Lee
North Louisiana Exp Sta'n
Ouachita La
Hon J E Le Blanc
Paincourtville La
P G Kleinpeter
Plaquemine La
E Dechamps Jr
Shell Beach La
Maj S T Grisamore
Thibodeaux La
T A Williams
West End La
Dr W M Guice
Winnsborough La

Maine.

Jos Wood
Bar Harbor Me
L H Murch
Belfast Me
C C Lovejoy
Bethel Me
Dr D E Seymour
Calais Me
Silas West
Cornish Me
Frank W Kingsley
East Machias Me
H M Mansfield
Fairfield Me
J M S Hunter
Farmington Me
Post Surgeon
Fort Preble Portland Me
Post Surgeon
Kennebec Arsenal
Augusta Me
Prof W C Strong
Kents Hill Me
Union Water Power Co
Lewiston Me
V P Hall
Mayfield Me
G L Upton
Millbridge Me
Prof M C Fernald
Orono Me
C Hopkins
West Jonesport Me

Maryland.

A E Acworth
Barren Creek Springs Md
F F Brown
(Bœtcherville)
Cumberland Md
E T Shriver
Cumberland Md
H Shriver
Cumberland Md
A F Galbreath
Darlington Md
G W Minnich & Son
Easton Md
Prof G G Curtis
Fallston Md
Post Surgeon
Fort McHenry
Baltimore Md
McClintock Young
Frederick Md
Jos Plummer
Jewell Md
Geo W Joy
Leonardtown Md
McDonogh Institute
McDonogh Md
Dr Howard H Hopkins
New Market Md
Mt St Mary College
Mt St Marys Md
Dr C W Weaver
Taneytown Md
Woodstock College
Woodstock Md

Massachusetts.

F M Green
Adams Mass
Miss S C Snell
Amherst Mass
Hatch Experiment Station
Amherst Mass
Ag'l Experiment Station
Amherst Mass
A B Wiggin
Andover Mass
Post Surgeon
Fort Warren Boston Mass
Prof W H Niles
Boston Mass
Rev A K Teele (Blue Hill)
Milton Mass
Prof A L Rotch (Blue Hill)
Readville Mass
Desmond Fitz Gerald
Brookline Mass
Harvard College Observat'y
Cambridge Mass
E C Brooks (Cambridge)
Mt Auburn Mass
Prof W M Davis
Cambridge Mass
J Warren Smith
Cambridge Mass
F H Norton
Chicopee Mass
G W Weeks
Clinton Mass
F A Tower
Concord Mass
Gen J H Reid
Cotuit Mass
Jas Childs
Deerfield Mass
Conant Observatory
Dudley Mass
Geo E Lyon
(Egg Rock)
Nahant Mass
C V S Remington
Fall River Mass
O B Truesdell
Fiskdale Mass
Dr J Fisher
Fitchburg Mass
Dr A P Mason
Fitchburg Mass
Nelson Dupuy
Florida Mass
I E Baker
Florida Mass
Boston Water Works
Framingham Mass
Dr W E Brown
Gilbertville Mass
C Woolley
Groton Mass
B B Cutler
Heath Mass
A J Newman
Hoosac Tunnel Mass
Essex Company
Lawrence Mass
Leicester Academy
Leicester Mass
W B Hosmer
Leominster Mass
Prop Locks & Canals
Lowell Mass
F E Saunders
Lowell Mass
M W Graves
Ludlow Mass
J C Haskell
Lynn Mass
W C Winter
Mansfield Mass
R M Gow
Medford Mass
Middleborough Water Wk's
Middleborough Mass
Dr G E Fuller
Monson Mass
Wm Street
(Mount Nonotuck)
Mount Tom Mass
Dr W D Hodges
Nahant Mass
T R Rodman
New Bedford Mass
New Bedford Water Works
New Bedford Mass
F V Pike
Newburyport Mass
Newburyport Water Works
Newburyport Mass
C H Kohlrausch Jr
North Billerica Mass
J M Clark
Northampton Mass
Miss L B Knapp
Plymouth Mass
Mrs E M West
Princeton Mass
J R Smith
Provincetown Mass
Mrs I D Page
Randolph Mass
Miss L W Chase
Royalston Mass
A A Smith
Salem Mass
M E Cain
Savoy Mass
Elisha Slade
Somerset Mass
H W Cushing
South Hingham Mass
Post Surgeon
National Armory
Springfield Mass
W K Lewis
Swampscott Mass
Dr E U Jones
Taunton Mass
A F Sprague
Taunton Mass
Taunton Water Works
Taunton Mass
C H Wilmarth
Taunton Mass
Dr S W Abbott
Wakefield Mass
Boston Mf'g Co
Waltham Mass
Prof Sarah F Whiting
Wellesley Mass
G S Newcomb
Westborough Mass
Williams College Obsy
Williamstown Mass
L R Symmes
Winchester Mass

Michigan.

W H Howard
Adrian Mich
Prof C E Barr
Albion Mich
G W Grigsby
Allegan Mich
P M Smith
Alma Mich
J W Glover
Ann Arbor Mich
Wm Atkin (Arbela)
Millington Mich
H Obenhoff
Atlantic Mine Mich
L H Hawley
Baldwin Mich
F N Hilton (Ball Mt)
Pontiac Mich
Mrs Ida McDiarmid
Bear Lake Mich
R O Gould (Berlin)
Smith Mich
C W Cornwall
Bell Branch Mich
C Leavitt
Bellaire Mich
Dr H V Tutton
Benton Harbor Mich
J W Vaudeman
Benzonia Mich
F A Zerby
Berrien Springs Mich
W J Jones
Berrien Springs Mich
D B Alger
Birch Run Mich
S Alexander
Birmingham Mich
David Straehly (Bronson)
Burr Oak Mich
E S Grierson
Calumet Mich
E H Green
Charlevoix Mich
Jacob Walton
Cheboygan Mich
D Woodward
Clinton Mich
G W Teller
Colon Mich
A M Shotwell
Concord Mich

C W Brown
Crystal Falls Mich
Dr N D Yale
Deerfield Mich
Post Surgeon
Fort Wayne Detroit Mich
Prof J K Osgerby
East Tawas Mich
J W Chapin
Eden Mich
Mrs H A Hepburn
Evart Mich
L D Watkins
(Fairview)
Manchester Mich
M Conklin
Fitchburgh Mich
W L Fisher
Flint Mich
Post Surgeon Ft Brady
Sault de Ste Marie Mich
Post Surgeon
Fort Mackinac
Mackinac Id Mich
C I Rathbun
Fremont Mich
J H Scott
Gaylord Mich
D Fred Sweet
Grand Rapids Mich
J W Morris
Grape Mich
Dr O Palmer
Grayling Mich
L B Smith
Hanover Mich
E S Shaw
Harbor Springs Mich
W E Aldrich
Harrison Mich
F H Edwards
Hart Mich
Dr F R Timmerman
Hastings Mich
C F Leipprandt
Hayes Mich
A D DeGarmo
Highland Station Mich
C W Cain
Hillman Mich
E B Rodgers
Hillsdale Mich
J B Thorburn
Holt Mich
F W Munson
Howell Mich
A H Boies
Hudson Mich
O L Giddings
Ivan Mich
J A Rath
Jackson Mich
W Bice
Jeddo Mich
W A Black
Kalamazoo Mich
Dr H B Baker
Sec State Board of Health
Lansing Mich
A Lathrop
Lathrop Mich
H C Bradish (Madison)
Adrian Mich
Dr G H Green
Marshall Mich
N Cody
Mayville Mich
G A Whitbeck
Montague Mich
Jas White (Caldwell)
Manton Mich
J A Hartzler
Mottville Mich
E B Bushnell
Noble Mich
P Mayo
(North Marshall)
Battle Creek Mich
Olivet College
Olivet Mich
W H Faxon
Ovid Mich
L Marvill
Parkville Mich
J C Gould
Paw Paw Mich
H M Warren
Pontiac Mich
J W Hutchins
Pulaski Mich
L R Brown
Rawsonville Mich
Dr W C Gates
Rockland Mich
Prof O D Thompson
Romeo Mich
A O Hunt
St Johns Mich
Rev J Ferris
St Ignace Mich
W E Nims
Sand Beach Mich
J J Decker
Standish Mich
Dr J S Caulkins
Thornville Mich
A Smith
Vandalia Mich
M M McCormack
Vienna Mich
V W Eaton
(Washington)
Romeo Mich
J J Gilding
Weldon Creek Mich
W H Middagh
White Pigeon Mich
J H Forster
Williamston Mich
J C Bemiss
Ypsilanti Mich

Minnesota.

C E Crane
Alma City Minn
John Ross
Crookston Minn
D F Akin
Farmington Minn
Post Surgeon
Fort Snelling Minn
C F Greening
Grand Meadow Minn
John Ellingson
(Leach Lake)
Grand Rapids Minn
J G C Johnson
Granite Falls Minn
Miss Clarrie Tanner
Kinbrae Minn
Wm Maddy
(Lake Winnibigoshish Dam)
Grand Rapids Minn
L B Davis
Le Sueur Minn
U O Cox
Mankato Minn
J H Harmon
Minneapolis Minn
Wm Cheney
Minneapolis Minn
L G Moyer
Montevideo Minn
D T Wheaton
Morris Minn
Carleton College
Northfield Minn
Neil Johnson (Pine River)
Brainerd Minn
Prof O Whitman
Red Wing Minn
Capt F Wherland (Rolling Green)
Fairmont Minn
H W Hill
St Charles Minn

Mississippi.

W L McGee
Agricultural College Miss
J M Cox
Batesville Miss
John Osoinach
Bay St Louis Miss
A G Smith
Booneville Miss
E M Bee
Brookhaven Miss
Dr G W Smith-Vaniz
Canton Miss
Lloyd T Binford
Duck Hill Miss
C W Barber
Edwards Miss
James E Mills
Enterprise Miss
I N Bedford
Fayette Miss
E R Somerville
Greenville Miss
J H Cleveland
Hattiesburgh Miss
L Heyman
Kosciusko Miss
Capt C D Koch (Logtown)
Pearlington Miss
B T Webster
Louisville Miss
W H Hill
Palo Alto Miss
Dr C W Bolton
Pontotoc Miss
Henry C Stevens
Rienzi Miss
Dan McColl
(Ship Island) Biloxi Miss
J N Teunisson
Summit Miss
Prof R B Fulton
University Miss
Dr A J Sanderson
Vaiden Miss
Prof J Reeves
Washington Miss
A Erickson
Water Valley Miss
W S Davis
Waynesborough Miss
H C Goosey
Yazoo City Miss

Missouri.

Dr H W Tuttle
Adrian Mo
L T Theilmann
Appleton City Mo
C Hutchinson
Arlington Mo
Miss Nellie A Webster
Austin Mo
L Benecke
Brunswick Mo
Pettit & Welch
Carrollton Mo
Dwight C Hanna
Carthage Mo
H J Swetland & Co
Chillicothe Mo
W C Wood
Chillicothe Mo
Levi Chubbuck
Columbia Mo
Rev Fr Paul
Conception Mo
Henry Miller
Concordia Mo
Wick Morgan
Dadeville Mo
H M Wollard
Dunnegan Mo
David Sharpe
East Lynne Mo
J H Sharp
Eight Mile Mo
S Newton
Eldon Mo
A Reinisch
Excelsior Springs Mo
Prof T Berry Smith
Fayette Mo
Fred W Duenckel
Forest Park Station
Saint Louis Mo
Wm Muir
Fox Creek Mo
Prof C W Pritchett
Glasgow Mo
L M Bean
Gordonville Mo
H J Clevenger
Harris Mo
A J Sharp
Harrisonville Mo
S W Maushund
Hermann Mo
C B Lane
Jefferson City Mo
S J Spurgeon
2416 E 9th st
Kansas City Mo
S S Stahl
Kidder Mo
W D Wade
Lamonte Mo
M W Serl
Lebanon Mo
J R Eaton
Liberty Mo
E R Graham
Marble Hill Mo
W H Black
Marshall Mo
J D Sanders
Mine La Motte Mo
Max Eimbeck
New Haven Mo
Henry Bruihl
Oak Ridge Mo
Wm Kaucher
Oregon Mo
Sam M Ruley
Oregon Mo
M B W Harman
Pickering Mo
W A McDowell
Platt River Mo
Wm Hirons
Princeton Mo
Prof A L McRae
Rolla Mo
C B Armstrong
Sarcoxie Mo
Dr J R Mudd
St Charles Mo
L C Saeger
St Charles Mo
Post Surgeon
Jefferson Barracks
Saint Louis Mo
Prof F E Nipher
Washington University
Saint Louis Mo
C G Taylor
Sedalia Mo
J S Chandler
Shelbina Mo
G W Goodlett
(Stellada)
Windsor Mo
Prof J H Frick
Warrenton Mo
J R Dudley
Withers Mills Mo
Anthony Zeitinger
Zeitonia Mo

Montana.

Will Kennedy
Boulder Valley Mont
Geo T Wicks
Cokedale Mont
S M Corson
Choteau Mont
College of Montana
Deer Lodge Mont
Post Surgeon
Fort Assinniboine Mont
Post Surgeon
Fort Custer Mont
Post Surgeon
Fort Keogh Mont
Post Surgeon
Fort Missoula Mont
Post Surgeon
(Camp Poplar River)
Poplar Creek Agency Mont
J H Ray
Glendive Mont
Chas L Herzog
Great Falls Mont
H C Ostein
Livingston Mont
R H Clendenin
Martinsdale Mont
J M Graham
Powderville Mont
Eugene Stark
Virginia City Mont

Nebraska.

Dr W R Lewis
Alliance Nebr
Peter Fowlie
Ansley Nebr
G W Mitchell
Arborville Nebr
G D Carrington
Auburn Nebr
A H Gale
Bassett Nebr
Dr J T Armstrong
Beatrice Nebr
C W Malone
Beaver City Nebr
J F McGaughey
Brandon Nebr
C E Nichols
Burwell Nebr
Dr G H Roberts
Creighton Nebr
Prof G D Swezey
Crete Nebr
Claude Rutter
Crete Nebr
G A Loveland
Crete Nebr
E B Taylor
David City Nebr
Chas Seltz
De Soto Nebr
H C Judson
Dunning Nebr
A Dahl
Ericson Nebr
J A Wood.
Ewing Nebr
Dr I Humphrey
Fairbury Nebr
P B Gailord
Fairfield Nebr
Post Surgeon
Fort Niobrara Nebr
Post Surgeon
Fort Omaha Nebr
Post Surgeon
Fort Robinson Nebr
Post Surgeon
Fort Sidney Nebr
J N Bennett
Franklin Nebr
Isaac E Heaton
Fremont Nebr

R B Spear
Geneva Nebr
G S Truman
Genoa Nebr
John P Finley
Gering Nebr
W L Rutledge
Grant Nebr
J H Thompson
Grand Island Nebr
Thos B A Watson
Hartington Nebr.
Dr J T Fleming
Harvard Nebr
O F Hartwell
Hastings Nebr
Wm Waterman
Hay Springs Nebr
Dr C M Easton
Hebron Nebr
M E Randolph
Holdrege Nebr
J M Bird
Imperial Nebr
D A Piercy
Kennedy Nebr
D Henderson Jr
Kimball Nebr
Ira P Griswold
Lexington Nebr
University of Nebraska
Lincoln Nebr
R W Blake
Long Pine Nebr
John Ellis (Marquette)
Central City Nebr
Henry Giger
Mayberry Nebr
J Hull
Minden Nebr
J B Parmelee
Nebraska City Nebr
D W Hasson
Norfolk Nebr
E W Black
North Loup Nebr
G S Clingman
Oakdale Nebr
A U Morris
O'Neill Nebr
F M Larison
Ough Nebr
C Shieldstream
Palmer Nebr
J A Taylor
Pawlet Nebr
R D Harris
Paxton Nebr
H Montgomery
Precept Nebr
S Rufus Mason
Purple Cane Nebr
E Smith
Ravenna Nebr
J S Spooner
Sargent Nebr
Sugar Experimental Station
Schuyler Nebr
L E Ost
Seward Nebr
G H Rogers
Springview Nebr
J M Noyes
Stockville Nebr
J L Harrington
Superior Nebr
P W Risser
Syracuse Nebr
W L Dunlap
Tecumseh Nebr
Dr A B Nesbit
Tekamah Nebr
T D Heath
Thedford Nebr
W Bardon
Wallace Nebr

G Treat
Weeping Water Nebr
J L Truman
West Hill Nebr
E G Bruner
West Point Nebr
Thos Donegan
Whitman Nebr
Geo D Coutant
Wilcox Nebr
Mrs C W Le Bar
Wilcox Nebr
W H Davis
York Nebr

Nevada.

O B Vincent
Austin Nev
J R Harcourt
Belleville Nev
G Nicholl
Belmont Nev
Agent C P R R
Beowawe Nev
J G W Mitchell
Candelaria Nev
Prof C W Friend
Carson City Nev
D C Grunow
Carson City Nev
W T Crane
(Cranes Ranch) Elko Nev
D Fowler
Downeyville Nev
C H Sproule
Elko Nev
J F Cupid
Ely Nev
Frank E Joannes
Eureka Nev
G W Dungan
Genoa Nev
C P Mengel
Hawthorne Nev
Miss Lillian Merrill
(Hot Springs)
White Plains Nev
Agent C P R R
Humboldt Nev
Mrs Ross Lewers
(Lewers Ranch)
Franktown Nev
C J Adams
Mill City Nev
Agent C P R R
Palisade Nev
Wm Oothout
Palmetto Nev
N P Dooley
Pioche Nev
Wm E Barney
State Univers'y Reno Nev
L Allen
St Clair Nev
Wm Harton
Sunnyside Nev
O L C Fairchild
Tuscarora Nev
James B Gilmore
Tybo Nev
Prof Mark Averill
Virginia City Nev
C H Gordon
Wabuska Nev

New Hampshire.

F W Palmer
Antrim N H
O F Cole
Berlin Falls N H
Dr Q A Bridges
Berlin Mills N H
Hon W L Foster
Concord N H
M K Gordon
Concord N H
N A Briggs
East Canterbury N H

John M Wilson
Groveton N H
Ag'l Experiment Station
Hanover N H
Dartmouth College Obs'y
Hanover N H
Lake Winipiseogee
Cotton and Woolen M'f'g Co
Lake Village N H
Charles Nurse
Littleton N H
W Little
Manchester N H
Jackson Co
Nashua N H
W C Gale
Newton N H
J L Binford
North Conway N H
Miss Helen M Clark
Plymouth N H
N B Waters
Stratford N H
E A Knowlton
Walpole N H
A A Higgins
West Milan N H

New Jersey.

H Allaire
Allaire N J
R Ross
Asbury Park N J
John H Eadie
Bayonne N J
Rev W J Leggett
Belleville N J
Samuel J Hixson
Belvidere N J
Prof C F Richardson
Beverly N J
J H Preston (Billingsport)
Paulsborough N J
E H Freeman
Blairstown N J
H A Jordan
Bridgeton N J
W T Wilson
Bridgeton N J
L M Dye Jr
Camden N J
Dr J F Leaming
Cape May C H N J
Wm C Harris
Dover N J
H Y Postma
Egg Harbor City N J
J B Drake
Elizabeth N J
I H Levy
Franklinville N J
Miss A S Yard
Freehold N J
R N Cornish
Gillette N J
Prof F H Root
Hightstown N J
Dr F C Price
Imlaystown N J
Geo. Fleming
Junction N J
Dr G H Larison
Lambertville N J
W L Lance Jr
(Lancewood)
Whiting N J
G W Hockenbury
Locktown N J
T J Beans
Moorestown N J
John B Collins
Mt Holly N J
F W Ricord
Newark N J
Mrs G H Cook
New Brunswick N J
C V Meyers
New Brunswick N J

E W McGann
New Brunswick N J
D L Foster
Newton N J
W Lake
Ocean City N J
Rev S W Knipe
Oceanic N J
J T Probert
Paterson N J
S A Miller
Pochunk Mt
Deckerton N J
S Haines
Rancocas N J
J Fleming
Readington N J
Wm Matlack
Salem N J
Miss A P Sutphen
Somerville N J
Dr W J Chandler
South Orange N J
D T Atwood
Tenafly N J
E R Cook
Trenton N J
Wm W Austin
Vineland N J

New Mexico.

A Knell
Albert N Mex
W S Burke
Albuquerque N Mex
W P Metcalf
(Antelope Spring)
via Chilili N Mex
S Parisis
Bernalillo N Mex
L R E Paulin
Bloomfield N Mex
E A Sutherland
Chama N Mex
J M Fish
Coolidge N Mex
Eulogia Martinez
(Dulce)
Amargo N Mex
T F Blackmore
Eddy N Mex
M G Burkholder
Embudo N Mex
E A Clemens
Estalina Sps (via)
Magdalena N Mex
Henry C Pickles
Folsom N Mex
Post Surgeon
Fort Bayard N Mex
Post Surgeon
Fort Stanton N Mex
Post Surgeon
Fort Wingate N Mex
J E Whitmore
Gallinas Spring N Mex
E W Cosner
Halls Peak N Mex
J E Smith
Hillsborough N Mex
Mrs H F Findley
La Luz N Mex
Richard Pohl
Los Lunas N Mex
E K Caldwell
Monero N Mex
Jose M Vega
Nogal N Mex
S D Webster
Olio N Mex
Jno Bouquet
Pojuaque N Mex
R H Hills (Red Canon)
Carthage N Mex
C N Anthony
Socorro N Mex
D D Domas
Springer N Mex

Wm L McClure
Taos N Mex
F C Buell
Wallace N Mex

New York.

F A Green
Albion N Y
H R Ainsworth M D
Addison N Y
Prof F S Place
Alfred Centre N Y
John P Slocum
Angelica N Y
J D Tate
Arcade N Y
Miss Etta E Wilcox
Arkwright N Y
S C Suydam
Baldwinsville N Y
Dr T S Armstrong
Binghamton N Y
Wm H Ross
Brentwood N Y
Dr F A Winne
Brockport N Y
D B Stillman
Brookfield N Y
Post Surgeon Fort Porter
Buffalo N Y
Prof H Priest
Canton N Y
Thomas Manning
Carmel N Y
R Sanford Miller
Constableville N Y
G Pomeroy Keese
Cooperstown N Y
Post Surgeon
Davids Island N Y
William Bolling
Dunkirk N Y
D C Moon
Dunkirk N Y
Wm P Hunt
(Eden Centre)
Eden N Y
Gerity Brothers
Elmira N Y
T P Yates
(Factoryville)
Waverly N Y
Robert Warwick
Fleming N Y
Mrs N S Yates
Geneva N Y
Prof D C Forr
Glenns Falls N Y
Post Surgeon
Fort Hamilton N Y
H C Fairchild
Hammondsport N Y
C H Spaulding
Hess Road Station N Y
James Hyatt
(Honeymead-brook)
Bangall N Y
Chas E Whitney
Humphrey N Y
Mrs Jane Pulver
Italy Hill N Y
Engineering Dept
Cornell University
Ithaca N Y
Prof E A Fuertes
Ithaca N Y
Observer Weather Service
Ithaca N Y
C L Bishop
Jamestown N Y
Henry A Stone (Kingston)
Rondout N Y
Wm L Annin
Le Roy N Y
C S Rice
Lowville N Y

Edward Hall C E
Lyon Mountain N Y
John Forkey
Lyon Mountain N Y
Dr M A Veeder
P O Box 602 Lyons N Y
R S Holmes
(Marshland)
Apalachin N Y
Albert B Johnson
Malone N Y
S Talcott
Middletown N Y
Edward A Smiley
Minnewaska N Y
J E White
Mt Morris N Y
G A Yates
New Lisbon N Y
Director Met'l Observatory
Central Park
New York City
Post Surgeon
Fort Columbus
New York City
C A Wooster
North Hammond N Y
Chas Fenton
Number Four N Y
J P Davis
Oxford N Y
E B Bartlett
(Palermo)
Vermillion N Y
J N Tilden
Peekskill N Y
G H Hudson
Plattsburgh N Y
Post Surgeon
Plattsburgh Barracks N Y
Prof John M Dolph
Port Jervis N Y
W H Jeffers
(near Perry City)
Trumansburgh N Y
G W F Smith
Potsdam N Y
Vassar College Obs'y
Poughkeepsie N Y
Wm Weaver
Quaker Street N Y
Dr H C Sutton
Rome N Y
J H Caryell
Romulus N Y
Post Surgeon
Madison Barracks
Sacketts Harbor N Y
Selah B Strong
Setauket N Y
Rev Charles Simpson
Sherman N Y
James E Wilson
South Canisteo N Y
D C Sharpe
South Kortright N Y
Post Surgeon
Ft Wadsworth Rosebank
Staten Island N Y
Prof H A Peck
Syracuse N Y
R T Church
Turin N Y
Thomas Birt Utica N Y
M F White
Victor N Y
George A Fairbanks
Watertown N Y
Dr James K King
Watkins N Y
O F Corwin
Wedgwood N Y
Post Surgeon
Fort Schuyler
West Chester N Y
Post Surgeon
Military Academy
West Point N Y
Post Surgeon
Watervliet Arsenal
West Troy N Y
Post Surgeon
Willets Point
Whitestone N Y
Prof O R Willis
White Plains N Y
Post Surgeon
Fort Niagara
Youngstown N Y

North Carolina.

Dr Karl von Ruck
Asheville N C
J H Greene
Bakersville N C
Prof J W Gore
Chapel Hill N C
H C Dunn
Concord N C
T B Lindsley
Douglas N C
Prof Richard H Lewis
Hendersonville N C
Mrs R L Beall
Lenoir N C
W J Scroggs
Lexington N C
E P Holcomb
Linville N C
L W Bagley
Littleton N C
Prof S D Bagley
Louisburg N C
Prof J C Johnson
Madison N C
Dr P L Murphy (Insane Asy)
Morganton N C
Prof H T J Ludwig
Mt Pleasant N C
J W Ashby
Mt Airy N C
Prof Geo S Wills
Oak Ridge N C
Prof A H Merritt
Pittsborough N C
T C Harris
Raleigh N C
Dr Herbert B Battle
Raleigh N C
C F von Herrmann
Raleigh N C
J A Hedrick
Salisbury N C
Robt P McAnally
(Saxon)
Madison N C
R J Noble
Smithfield N C
H L Kimrey
Soapstone Mount N C
Dr G H Saddleson
Southern Pines N C
J L Hayward
Wadeville N C
Dr J M Gallagher
Washington N C
T A Clark
Weldon N C
H Clay Williams
Willeyton N C

North Dakota.

F N Burrows
Bathgate N Dak
H B Walton
Carrington N Dak
Myron L Ayres
Dickinson N Dak
Chas Ackley
Ellendale N Dak
Prof E F Ladd
Fargo N Dak
Post Surgeon
Fort Buford N Dak
Post Surgeon
Fort Pembina N Dak
Post Surgeon
Fort Totten N Dak
Post Surgeon
Fort Yates N Dak
S J Pound
Gallatin N Dak
H H Mott
Grafton N Dak
N S French
Grand Rapids N Dak
Leo L Lang
Hope N Dak
John B Fried
Jamestown N Dak
L C Stanford
Kelso N Dak
A M Tofthagen
Lakota N Dak
A C O Lomen
Milton N Dak
Simon Oy
Minot N Dak
Julius H Hoof
Napoleon N Dak
J A Power
Power N Dak
F R Hill
Steele N Dak
Chas R Lyman
St Johns N Dak
G S Hagen
St Thomas N Dak
Hon J J Dobbin
Valley City N Dak
C A McKean
Wahpeton N Dak
Peter Ross
Wild Rice N Dak
Peter M Cudhie
Willow City N Dak
C L Thomson
Woodbridge N Dak

Ohio.

H V Egbert
Akron Ohio
Dr P H Clark
Ashland Ohio
Prof Eli Dunkle
Athens Ohio
S M Painter
Bangorville Ohio
Frank E Fitch
Bellevue Ohio
P W Barton
Bement Ohio
C F Stokey
Canton Ohio
Prof W F McDaniel
Celina Ohio
E T M Williams
Clarksville Ohio
G A Hyde
85 Kennard st
Cleveland Ohio
Post Surgeon
Columbus Barracks
Columbus Ohio
Prof B F Thomas
Columbus Ohio
C M Strong
Columbus Ohio
W H Baker
Ohio State University
Columbus Ohio
Mrs Edith E L Boyer
Dayton Ohio
B R Ault
Demos Ohio
A C Beardsley
Ellsworth Ohio
C W Goodspeed
Elyria Ohio
Prof A C Redding
Findlay Ohio
Robbins Bros
Fostoria Ohio
S M Luther
Garrettsville Ohio
Dr T W Gordon
Georgetown Ohio
Prof A D Cole
Granville Ohio
W B Longstreth
Gratiot Ohio
C G Katzenberger
Greenville Ohio
James Bull
Hanging Rock Ohio
D G Lewis
Hassan Ohio
Prof G H Colton
Hiram Ohio
Prof N B Hobart
Hudson Ohio
Dr J B Owsley
Jacksonborough Ohio
L J Demarest
Kenton Ohio
Dr James Little
Logan Ohio
W S Dean
Lordstown Ohio
Prof T D Briscoe
Marietta Ohio
E H Raffensberger
Marion Ohio
C H Morris
McConnelsville Ohio
Simon Waterston
Montpelier Ohio
Dr T C Hunter
Napoleon Ohio
Jos A Hook
New Alexandria Ohio
Dr A M Beers
New Comerstown Ohio
H D Gowey
North Lewisburgh Ohio
Prof F F Jewett
Oberlin Ohio
E U Hyde
Orangeville Ohio
Dr D N Allard
Pomeroy Ohio
Dr D B Cotton
Portsmouth Ohio
W N Cowden
Quaker City Ohio
George Olinger
Springborough Ohio
Prof T H Sonnedecker
Tiffin Ohio
Dr A Billhardt
Upper Sandusky Ohio
Prof C W Williamson
Wapakoneta Ohio
Thomas Mikesell
Wauseon Ohio
D Lorbach
Waverly Ohio
E B Michener
Waynesville Ohio
Prof J Haywood
Westerville Ohio
L S Motte
West Milton Ohio
Dr F Young
Weymouth Ohio
Mrs E P Wheeler
Wheeler Ohio
Dr O N Stoddard
Wooster Ohio
A G Frost
Youngstown Ohio

Oklahoma.

Post Surgeon
Fort Reno Okla
Post Surgeon
Fort Sill Okla
Morris Collar
Guthrie Okla

Oregon.

John Briggs
Albany Oregon
James W Smith
Arlington Oregon
F H Carter
Ashland Oregon
Geo Bennett
Bandon Oregon
T L Arnold
Beulah Oregon
J J McCullagh
Canyon City Oregon
U S Engineer Officer
Cascade Locks Oregon
State Agr'l College
Corvallis Oregon
John Macdonald
Deer Island Oregon
Dr G Wigg
East Portland Oregon
Thos Pearce
Eola Oregon
Prof S E McClure
State University
Eugene Oregon
Pacific University
Forest Grove Oregon
J S Gray
Gardiner Oregon
J B Paddock
Grants Pass Oregon
J H Neal
(Happy Valley)
Diamond Oregon
W O Royce
Hardman Oregon
A Smith
Heppner Oregon
Dr P G Barrett
Hood River Oregon
W H Goudy
Hubbard Oregon
P Britt
Jacksonville Oregon
W F White
(John Day Junction)
Wagner Oregon
J D McCully
Joseph Oregon
A Y Beach
Lake View Oregon
J K Romig
La Grande Oregon
L A Miller
Lone Rock Oregon
Capt W Harris
McMinnville Oregon
Rev Dr Urban Fisher S J
Mount Angel Oregon
Edmund Robinson
Newberg Oregon
Dr H J Fuller
New Bridge Oregon
A E Acklem
Newport Oregon
J H Zohner
Pendleton Oregon
B S Pague
Portland Oregon
Hon J A Wright
Sparta Oregon
S L Brooks
The Dalles Oregon
Dr H W Vincent
Toledo Oregon
F McDonald
Vale Wash
G W Dalles
Vernonia Oregon
M A Baker
Weston Oregon

Pennsylvania.

Dr C B Dudley
Altoona Pa
J Grathwohl
Blooming Grove Pa
A H Boyle
Blue Knob Pa
J E Pague
Carlisle Pa
W T Gordon
Coatesville Pa
M H Boye
Coopersburgh Pa
Wm Loveland
Corry Pa
T H Walton
Doylestown Pa
H D Miller
Drifton Pa
Theo Day
Dyberry Pa
Dr J W Moore
Easton Pa
C F Sweet
Edinborough Pa
T B Lloyd
Emporium Pa
J C Hilsman
(Forks of Neshaminy)
Rush Valley Pa
G W Wood
Frederick Pa
E C Wagner
Girardville Pa
N Moore
Grampian Hills Pa
Wm Shipe
Hamburgh Pa
Dr T B Orchard
(Salem Corners)
Hamlinton Pa
Prof F P Leavenworth
Haverford College Pa
Prof J A Stewart
Hollidaysburgh Pa
John Torrey
Honesdale Pa
L P Townsend
Hulmeville Pa
Prof W J Swigart
Huntingdon Pa
E C Lorentz
Johnstown Pa
G H Kemp
Kane Pa
B P Kirk
Kennett Square Pa
R J Mickey
Kilmer Pa
Lewis T Lampe
Lancaster Pa
H L Shull
Lansdale Pa
G W Hayes
Lebanon Pa
Geo W T Warburton
Le Roy Pa
F O Whitman
Lewisburgh Pa
Howard Miller
Lewisburgh Pa
J T Ambrose
Ligonier Pa
Prof J A Robb
Lock Haven Pa
O V Metzger
(Aqueduct)
Logania Pa
Thos F Sloan
McConnellsburgh Pa
E C Williams
Meadville Pa
Stephen S Jenkins
Meshoppen Pa
W T Butz
New Castle Pa
Dr Geo M Grim
Ottsville Pa
J D Brennan
Pleasant Mount Pa
Chas Moore
Pottstown Pa
John E Codman
Bureau of Water
Philadelphia Pa
John Comly
1529 Centennial Ave
Philadelphia Pa
Post Surgeon
Frankford Arsenal
Philadelphia Pa
T F Townsend
Philadelphia Pa
Franklin Institute
Philadelphia Pa
Knowles Croskey
Phœnixville Pa
Post Surgeon
Allegheny Arsenal
Pittsburg Pa
R C Stover
Point Pleasant Pa
J L Heacock
Quakertown Pa
Franklin Yager
Reading Pa
Miss E A G Apple
Saegerstown Pa
J A Roth
Seisholtzville Pa
J M Boyer
Selins Grove Pa
Armstrong & Brownell
Smethport Pa
Geo Lowder
(Smiths Corners)
Point Pleasant Pa
W M Schrock
Somerset Pa
B M Hall
South Eaton Pa
Prof Wm Frear
State College Pa
Prof Susan J Cunningham
Swarthmore Pa
M Gustin
Troy Pa
Wm Hunt
Uniontown Pa
H D Deming
Wellsborough Pa
Dr J C Green
West Chester Pa
T Harvey Haines
Westtown Pa
A W Betterly
Wilkes Barre Pa
Chas Beecher
Wysox Pa
Mrs L H Grenewald
York Pa

Rhode Island.

N G Herreshoff
Bristol R I
N Helme
Kingston R I
Agr Exp Station
Kingston R I
G W Pratt
Lonsdale R I
Post Surgeon
Fort Adams Newport R I
Thos Dunn
Newport R I
C H Cannon
Olneyville R I
J H Walker
Pawtucket R I
Office City Engineer
Providence R I
Ladd Observatory
Providence R I
D W Hoyt
Providence R I

South Carolina.

Dr W H Geddings
Aiken S C
W G Peterson (Belmont)
Newberry S C
P W Scott
Brewer Mine S C
W R Godfrey
Cheraw S C
Hon A P Butler
Columbia S C
Observer Weather Service
Columbia S C
M P Daggett
Conway S C
J W Earl (Evergreen)
Hollands Store S C
J P McNair
Kitchings Mills S C
H D Elliott
Port Royal S C
Miss N L Dawson
Simpsonville S C
J J Lucas
Society Hill S C
Dr W W Anderson
Statesburgh S C
E Gillard
Trial S C
H G Reid
Walhalla S C
J Pagan
Winnsborough S C
J R Schorb
Yorkville S C

South Dakota.

A H Olwin
Aberdeen S Dak
W S Hill
Alexandria S Dak
E A Cooper
Britton S Dak
Prof Louis McLouth
Brookings S Dak
W F Van Dervoort
Castlewood S Dak
W H Boals
Clark S Dak
Thomas H Ruth
De Smet S Dak
Isaac Killian
Elkton S Dak
F J Cross (Cross)
Etta Mine S Dak
G A Perly
Flandreau S Dak
M K Judy
Forestburgh S Dak
Henry J Eidam
Forest City S Dak
Post Surgeon
Fort Meade S Dak
Post Surgeon (Fort
Randall) Armour S Dak
Post Surgeon
Fort Sully S Dak
Wm B Tapley
Frankfort S Dak
Dr W H Gates
Gary S Dak
R S Person
Howard S Dak
S W Glenn
Huron S Dak
A S Stuver
Kimball S Dak
D W Diggs
Millbank S Dak
J E Gilbert
Mitchell S Dak
J W Strouse
Oelrichs S Dak
Mrs M F Goddard
Onida S Dak
Robert R Woodward
Parker S Dak
J S Headley
Parkston S Dak
G D Young
Plankinton S Dak
E S Carter
Sioux Falls S Dak
J H Warren
Spearfish S Dak
S C Butterfield
St Lawrence S Dak
H Richmond
Tyndall S Dak
H S Fletcher
Watertown S Dak
J F Zimmerman
Wentworth S Dak
Harvey M Russ
Wessington Springs S Dak
G W Fink
Wolsey S Dak

Tennessee.

Miss Ella Wallace
Andersonville Tenn
Rev C F Williams
Ashwood Tenn
P B Calhoun
Austin Tenn
Miss Daisy Bell
Bethel Springs Tenn
G W Martin
(Missionary Ridge)
822 Cherry Street
Chattanooga Tenn
Prof J A Lyons
Clarksville Tenn
J I Hall
Covington Tenn
J C Diemer
Fayetteville Tenn
C F Vanderford
Florence Station Tenn
Dr John A Campbell
Franklin Tenn
W H Brown
Greeneville Tenn
J W Ayers
Harriman Tenn
R Downey
Hohenwald Tenn
W C Hall
Jacksboro Tenn
Hon T C Long
Jackson Tenn
W J Inman
Kingston Springs Tenn
J H Burrow
Lynnville Tenn
C Hawkins
McKenzie Tenn
Fred T Fisher
McMinnville Tenn
Dr J D Plunket
Nashville Tenn
H C Bate
Nashville Tenn
Dr L W Hooper
Newport Tenn
W C Thompson
Nunnelly Tenn
J C Williamson
Parksville Tenn
W H Fergusson
Riddleton Tenn
Miss C M Nugent
Rogersville Tenn
Dr W F G Wilson
Rugby Tenn
C L Hofner
Savannah Tenn
W J Breeding
Spring Dale Tenn
B P Fagan
Sharp Tenn
Miss Nora Williams
Union City Tenn
Dr C Buchanan
Waynesborough Tenn

Texas.

Dr Q C Smith
Austin Tex
Ernest Kruger
Austin Tex
Geo F Townsend
Austin Tex
W H Potter (Bear Creek)
Brady Tex
A D Oliver
Big Spring Tex
H Stevens
Brazoria Tex
J G Sloan
Brenham Tex
Prof C S Newhall
Brownwood Tex
W M Spitler
Burnet Tex
G H Chipman
Childress Tex
W G Minor
Coldwater Tex
Prof Duncan Adriance
College Station Tex
W A Crowder
Colorado Tex
J S Rogers
Columbia Tex
W H Hamilton
Box 169 Corsicana Tex
E L Gibson
Corsicana Tex
J N Reuss
Cuero Tex
G A Eisenlohr
Dallas Tex
Anthony Blum
Durham Tex
J C Edgar
Duval Tex
Post Sugeon
Ft Bliss El Paso Tex
Post Surgeon
Ft Brown Brownsville Tex
Post Surgeon
Ft Clark Brackettville Tex
Post Surgeon
Camp Eagle Pass Tex
Post Surgeon
Ft Hancock Tex
Post Surgeon
Ft McIntosh Laredo Tex
Post Surgeon
Camp Pena Colorado
Marathon Tex
Post Surgeon Ft Ringgold
Rio Grande City Tex
A Striegler
Fredericksburgh Tex
D T Ragsdale
Gainesville Tex
Lum Woodruff
Gallinas Tex
D D Bryan
Galveston Tex
I M Cline
Galveston Tex
A B Gant
Graham Tex
W J Crowley
Grapevine Tex
Dr J E Lay
Hallettsville Tex
Dr Chas W Croft
Hansford Tex
F Lusby
Hartley Tex
P D Sanders
Haskell Tex
J P Oberholser
Haymond Tex

D R Sanders
Houston Tex
W T Barr
Huntsville Tex
John Brownrigg
(Kent) Fort Davis Tex
Dr G W Newman
Liberty Tex
G W Krech
Longview Tex
J E Fisher
Luling Tex
Louis Runge
Menardville Tex
S G Lackey
Mesquite Tex
Dr J C Riley
Mountain Spring Tex
Capt Julius Geisecke
New Braunfels Tex
C Runge
New Ulm Tex
A L Rush
Ochiltree Tex
Miss Carrie Roberts
Panhandle Tex
E H Snider
Panter Tex
Robert Henry
Quanah Tex
Hamilton Foster
Roby Tex
Thos Wood
Round Rock Tex
Chas R Brown
San Angelo Tex
Gus A Duerler
San Antonio Tex
Post Surgeon
San Antonio Tex
T A Connor Sanderson Tex
W S Grace
Sanderson Tex
G H Hutchins
Sierra Blanca Tex
R MacNutt
Sierra Blanca Tex
C M Tilford
(Silver Falls)
Mt Blanco Tex
W Wipprecht
Sugar Land Tex
W Goodrich Jones
Temple Tex
J B Harman
Van Horn Tex
Charles F Mercer
Venus Tex
W H Godber
Waco Tex
W B Slack
Weatherford Tex
Dr O Eastland
Wichita Falls Tex

Utah.

E C Graff
Beaver Utah
Post Surgeon
Fort Du Chesne Utah
B F Cooke
Grouse Creek Utah
William Brown
Levan Utah
J H Walker
Utah Exp Sta
Logan Utah
E Caffall
Losee Utah
R Moncur
Mt Carmel Utah
H Crouse
Moab Utah
W R May
Nephi Utah
W W Crossman
Ogden Utah
Alex Matheson
Parowan Utah
T H Martin
Provo City Utah
George Hales
Richfield Utah
Seth A Pymm
St George Utah
Post Surgeon
Fort Douglas
Salt Lake City Utah
J Robbins
Snowville Utah
James Hughes
Stockton Utah

Vermont.

W H Childs
Brattleboro Vt
W B Gates
55 Elmwood Avenue
Burlington Vt
H L Bixby
Chelsea Vt
C H Lane
Cornwall Vt
J H Mears
Enosburgh Falls Vt
E A English
Hartland Vt
J W Hatch
Jacksonville Vt
Dr H A Cutting
Lunenburgh Vt
H F J Scribner
Strafford Vt
A Whitehead
Vernon Vt
B H Albee
Weathersfield Vt

Virginia.

Edw L C Scott
Ashland Va
D MacGregor
Avon Va
J W Fox Sr
Big Stone Gap Va
W N Stone
Bedford City Va
C R Moore
Birdsnest Va
W O Frith
Blacksburgh Va
O A Brown
Cape Charles Va
George Williams
Casanova Va
A H Tuttle
Charlottesville Va
D A Heatwole
Dale Enterprise Va
Post Surgeon
Fort Monroe Va
Post Surgeon
Fort Myer Va
Washington D C
Prof H D Campbell
Lexington Va
A T Lincoln
Marion Va
R V Gaines
Mossing Ford Va
G Dunn
Nottoway Va
Prof J M Colson Jr
Petersburgh Va
W H Pleasants
Richmond Va
Prof S C Wells
Salem Va
B W Jones
Spottsville Va
W N Parrott
Stanardsville Va
W C Hedrick
Staunton Va
J R Sim
Summit Va
H G Wadley
Wytheville Va

Washington.

W B Mack
Aberdeen Wash
R M Hoskinson
Madrone Wash
W H Mossman
Chehalis Wash
Charles Johnson
Chelan Wash
Miss Lillian M Rice
Coulee City Wash
S B L Penrose
Dayton Wash
R C Willis
Doe Bay Wash
Rev S R S Gray
East Sound Wash
Post Surgeon
Fort Canby Wash
care Astoria Oregon
Dr A Wilgus
Fort Simcoe Wash
Post Surgeon
Fort Spokane
Miles Wash
Post Surgeon
Fort Townsend
Port Townsend Wash
Post Surgeon
Fort Walla Walla Wash
D Pullen
Lapush Wash
Samuel Storrow
(Moxee Valley)
North Yakima Wash
F W D Mays
Pomeroy Wash
Alpheus Byers
Seattle Wash
Z McLaughlin
Sehome Wash
C P Culver
Tacoma Wash
Post Surgeon
Vancouver Barracks Wash
Mrs C B Carpenter
Vashon Wash
R W Starr
Waterville Wash

West Virginia.

W S Thompson
Alderson W Va
Isaac Baker
Beverly W Va
Dr D T E Casteel
Buckhannon W Va
Chas M Smith
Buckhannon W Va
Henry Resseger
Ella W Va
M R Lowther
Elizabeth W Va
Levi Johnson
Glenville W Va
Alexander Leeds
Grafton W Va
Lon H Hutchinson
Huntington W Va
J E Murdock
Kingwood W Va
Geo W Van Metre
Martinsburgh W Va
John M Judy
Moorefield W Va
West Virginia University
Morgantown W Va
L W Nuttall
Nuttallburgh W Va
T G Field
Parkersburg W Va
W H Gilbert
Piedmont W Va
D Titchenell
Pleasant Hill W Va
W D Holmes
Point Pleasant W Va
T G Pownall
Romney W Va
G H Trembly
Tannery W Va
F M Swann
Tylers Creek W Va
Christian Schnepf
Wheeling W Va

Wisconsin.

A J Smith
Amherst Wis
Herman F Lueder
Appleton Wis
Wm Toole
Baraboo Wis
E W Pierce
Barron Wis
F W Denison
Bayfield Wis
F H Crane
Beaver Dam Wis
E G Longcroft
Berlin Wis
L M Burt
Black River Falls Wis
John J Metzgar
Butternut Wis
B C Curtis
Cadiz Wis
R C Worthington
Centralia Wis
John Erb
Columbus Wis
Hon John Masbaum
Crandon Wis
A E Brainerd
Cumberland Wis
E S Austin
Delavan Wis
W R Collie
Delavan Wis
Joseph G Lawton
De Pere Wis
Samuel M Reese
Dodgeville Wis
W N Sloane
Eau Claire Wis
A Combacker
Ellsworth Wis
J E Breed
Embarrass Wis
John Halter
Florence Wis
J C Wedge
Fond du Lac Wis
W J Egbert
Hammond Wis
S N D Smith
Harvey Wis
Horatio C Flagg
Hayward Wis
E V Wernick
Hillsborough Wis
J A McIntosh
Honey Creek Wis
E B Heimstreet
Janesville Wis
E C McClelland
Juneau Wis
N A Pennoyer
Kenosha Wis
E S Koepenick
Koepenick Wis
A J Looze
Lincoln Wis
Washburn Observatory
Madison Wis
Miss Anna Lups
Manitowoc Wis
C H Grote
Mauston Wis
J H Treat
Meadow Valley Wis
Dr F Robert Zeit
Medford Wis
A Pillsbury
Menomonie Wis
Wm Heaslett
Neillsville Wis
Aug A Paulsen
New Holstein Wis
John Bender
Oconomowoc Wis
W K Smith
Oconto Wis
C W Staples
Osceola Mills Wis
J Rufus Hunter
Oshkosh Wis
D E Cameron
Pepin Wis
Rev E M Corey
Peshtigo Wis
F W Sackett
Phillips Wis
Robert Barnsdale
Plover Wis
L Cornelius
Prairie du Chien Wis
C W Guldager
Rhinelander Wis
Col W S Wood
Shawano Wis
Prof J A Jeffrey
Shell Lake Wis
J W Livingston
Sparta Wis
E W Crane
Sparta Wis
F W Alexander
Viroqua Wis
Chas J Salick
Watertown Wis
Robert Reynolds
Weston Wis
W Phillips
Westfield Wis
H Scott
Whitehall Wis

Wyoming.

H W Servis
Bitter Creek Wyo
O K Garvey
Casper Wyo
Ira B Moor
Evanston Wyo
Wm Werner
Fort Fetterman Wyo
John Fields
Fort Laramie Wyo
Post Surgeon
Fort Russell Wyo
Post Surgeon
Fort McKinney Wyo
Post Surgeon
Camp Pilot Butte
Rock Springs Wyo
Post Surgeon
Fort Yellowstone
Mammoth Hot Springs Wyo
Post Surgeon
Fort Washakie Wyo
J D Parker
Saratoga Wyo
J A Becker
Sheridan Wyo
R H Williams
(Grand View)
Sundance Wyo
Dr L S Barnes
Laramie Wyo
Prof B C Buffum
Laramie Wyo
J S Meyer
Lander Wyo
F S Lusk
Lusk Wyo

Sundance Exp Farm
Sundance Wyo
M R Johnston
Wheatland Wyo

Foreign.

Prof J Bolam
Govt Naviga School
14 Dock Place
Leith Scotland
Dr C F Hering
Burnside (Coronie)
Colony of Surinam
Dutch Guiana S A

G J Gibbs
Grand Turk
Turks Islands Brit W I

Director
Meteorological Obs'y
Guanajuato Mexico

Gen Russell Hastings
Hamilton Bermuda

Prof M Leal
Leon
Guanajuato Mexico

Director
Astro and Met'l Obs'y
Mazatlan Mexico
Director Cen Met Obs'y
City of Mexico Mexico
J C Herring
Topolobampo
Sinaloa Mexico
Prof G Baturoni
Vera Cruz Mexico
Prof C H McLeod
McGill College Obs'y
Montreal Canada

Prof P Scherer
Meteorological Obs'y
Port au Prince Hayti
Director Catholic Institute
Puebla Mexico
H Patrick
La Logia
Sinaloa Mexico
J Higgins
Saint Johns Newfoundland
Curtis J Lyons
Honolulu
Hawaiian Islands

Rafael Junquera
Santiago de Cuba
G Murdock
St Johns
New Brunswick
Dr Enrique del Monte
Calle 9 No 42 Vedado
Havana Cuba
Jos Ridgeway
St Thomas Danish W I
E Baynes Reed
Esquimault B C

ANNUAL SUMMARY FOR 1891.

The following general discussion of the weather over the United States during 1891 is based upon seven charts, published herewith, which show respectively: I.—The annual mean atmospheric pressure and the prevailing winds. II.—The annual mean temperature and the departure from the normal temperature. III.—The maximum temperature. IV.—The minimum temperature. V.—The absolute ranges of temperature. VI.—The annual precipitation. VII.—The departure of the annual precipitation from the normal precipitation. These charts have been prepared from data received from 1,087 regular and voluntary observers of the Weather Bureau. An index of the MONTHLY WEATHER REVIEW for 1891 is also published herewith.

ATMOSPHERIC PRESSURE.

The annual mean pressure was highest east of the Mississippi and south of the Ohio rivers, where it was above 30.10, and was lowest over the west part of the southern plateau region, where it was below 29.95. In an area extending from the Pacific coast between the 40th and 45th parallels over northern Nevada and northern Utah, and from the middle-eastern and southeastern slopes of the Rocky Mountains to the Atlantic coast south of the 42d parallel, the mean pressure was above 30.05. From the south Pacific coast over the southern plateau region and the Rio Grande Valley, and along the northern border of the country from Maine to the extreme north Pacific coast, the mean values were below 30.00.

TEMPERATURE.

The annual mean temperature was highest in extreme southern Florida, and at stations in the lower Colorado and lower Gila valleys, where it was above 75°. It was above 70° over the Florida Peninsula, at points along the immediate Gulf coast, and in the lower Rio Grande valley, and was above 60° along the Atlantic coast south of the 36th parallel, in the east and west Gulf states, in southern New Mexico, southern and western Arizona, in southern California, and thence over the San Joaquin and Sacramento valleys. The annual mean temperature was lowest in the British Possessions north of Lake Superior, Minnesota, and North Dakota, and at elevated Rocky Mountain stations north of New Mexico, where it was below 35°. It was below 45° north of a line traced from the coast of Maine irregularly westward to eastern Wyoming, thence southward to north-central New Mexico, and thence irregularly northwestward to northeastern Washington. The mean values were also below 45° at stations in the Sierra Nevada Mountains between the 38th and 40th parallels, and in an area covering east-central Nevada.

DEPARTURE FROM NORMAL TEMPERATURE.

The annual mean temperature was above the normal, except from the plateau region to the Gulf coast and the Florida Peninsula and in the interior of the Atlantic coast states south of Maryland. The greatest departure above the normal temperature was reported from the middle Saint Lawrence valley over the north part of the Lake region to the Red River of the North Valley and Manitoba, and at La Crosse, Wis., New York, N. Y., Boston, Mass., and Chatham, N. B., where it was 2°, or more, and the departure was generally more than 1° along the Pacific coast, over the Lake region, and along the immediate Atlantic coast north of Hatteras, N. C. The most marked deficiency in annual mean temperature was noted over the middle plateau region, and at Key West, Fla., where the departure below the normal exceeded 1°. A slight deficiency was reported at Portland, Me., and the annual temperature was about normal in an area extending over northern Missouri and central Illinois.

YEARS OF HIGHEST MEAN TEMPERATURE.

At Philadelphia, Pa., the mean temperature for 1891, 55°.1, was 0°.1 higher than the highest annual mean temperature previously reported for that station, noted for 1890, and at New York, N. Y., the mean for 1891, 53°.8, was the same as the highest annual mean, recorded for 1890. From Colorado and the southeastern slope of the Rocky Mountains over the Gulf and south Atlantic states the highest annual mean temperature occurred in 1890; from Oregon and Washington to the middle Missouri and Red River of the North valleys in 1889; from Kentucky over the middle and upper Ohio valleys, Pennsylvania, southern New York, and southern New England in 1881; and in the Lake region and the upper Mississippi and lower Missouri valleys in 1878.

YEARS OF THE LOWEST MEAN TEMPERATURE.

At Montrose, Colo., 7 years' record, and Keeler, Cal., 6 years' record, the mean temperature was 0°.9 and 0°.4, respectively, lower than the lowest annual mean temperature previously reported. In the Gulf States, Tennessee, and the south Atlantic states the lowest annual mean temperature was noted in 1885 and 1886; from the Missouri Valley over the Ohio Valley, the Lake region, and the middle Atlantic and New England states in 1875 and 1885; from the middle-eastern slope of the Rocky Mountains over the Red River of the North Valley in 1883; and along the Pacific coast in 1880.

MAXIMUM TEMPERATURE.

The absolute maximum temperature rose above 110° in the Sacramento, San Joaquin, Gila, and lower Colorado valleys. The highest temperature reported at a regular station of the Weather Bureau was 116°, at Yuma, Ariz., June 29th; the temperature rose to 114° at Fresno City, Cal., and Red Bluff, Cal., July 1st and August 12th, respectively; and temperature rising to 126° was reported at Pacific railroad stations in the Colorado Desert in June. At stations in the interior of the Pacific coast states from the valley of the Columbia River southward, over the west part of the southern plateau region, and in areas on the southeastern and middle-eastern slopes of the Rocky Mountains the maximum temperature was above 100°. It was above 90°, except on the extreme east and southeast New England coasts and at points in the eastern and northern Lake region; and at stations on the immediate Pacific coast north of the 38th parallel, and at Eureka, Cal., Neah Bay, Wash., and Eastport, Me., the maximum values were below 80°. At stations in the Pacific coast states south of the Columbia River the maximum temperature reported for 1891 was the highest on record, and at Port Huron, Mich., and Sandusky, Ohio, the maximum, 99° and 98°, respectively, was as high as previously noted.

MINIMUM TEMPERATURE.

The lowest temperature of the year was noted from eastern Montana over western Minnesota in February and March, when it fell below —30°, the lowest reading at a regular station of the Weather Bureau, —35°, being registered at Moorhead, Minn., February 28th. The temperature fell below zero in middle and northern New England, eastern New York, northeastern Pennsylvania, and north of a line traced from southern Ontario west-southwest to southern New Mexico, thence northwestward to west-central Nevada, and east of this line continued northward over northeastern California, eastern Oregon, and eastern Washington. The highest minimum temperature, 53°, was noted at Key West, Fla., and the minimum values were above 32°, the freezing point, over Florida south of the 29th parallel, along the immediate west Gulf coast, and along the immediate middle and south Pacific coasts.

TEMPERATURE RANGES.

The greatest range of temperature for the year, 131°, occurred at Fort Buford, N. Dak., and Moorhead, Minn. The range for the year exceeded 100° from eastern Oregon and eastern Washington to the western and northern Lake region

and southward over the east part of the middle plateau region and the middle-eastern slope of the Rocky Mountains, and in an area extending from Albany, N. Y., to Northfield, Vt. The least range of temperature for the year, 39°, was noted at Key West, Fla. The range was 45° at Eureka, Cal., and was less than 60° at points along the immediate Pacific coast, and at Hatteras, N. C.

PRECIPITATION.

The greatest precipitation for the year, 121.21 inches, was reported at Neah Bay, Wash. The precipitation exceeded 70.00 along the immediate north Pacific coast. In Nova Scotia, eastern Maryland, Virginia, the south Atlantic and middle and east Gulf states, and Tennessee the yearly precipitation exceeded 50.00 inches. In the lower Colorado and Gila valleys and thence over southeastern California to Keeler the precipitation for the year was less than 5.00 inches. It was also less than 5.00 inches in adjoining parts of south-central New Mexico and extreme western Texas, and in the British Northwest Territory north of eastern Montana. The precipitation was generally less than 20.00 inches in the Rocky Mountain and plateau regions and in the Rio Grande Valley.

DEPARTURE FROM NORMAL PRECIPITATION.

The precipitation for the year was generally deficient east of the 95th meridian. It was also deficient on the middle and south Pacific coasts and thence to the west Gulf coast. In the middle and northern districts west of the 95th meridian the precipitation was generally in excess of the average yearly amount. The most marked deficiency occurred along the immediate middle coast of the Gulf of Mexico, where it was more than 20 inches. The deficiency was more than 15 inches at Shreveport, La., and was more than 10 inches at points along the south Atlantic coast, and at Dubuque, Iowa, and Grand Haven, Mich. At stations in western Washington and western Oregon, and at Dodge City, Kans., and Saint Vincent, Minn., the excess in precipitation for the year was more than 10 inches. Small areas of excess also occurred in Tennessee, the middle Atlantic and New England states, in the Lake region, and along the Nova Scotia coast, the area of most marked excess extending from south-central Virginia to northeastern Maryland, where the precipitation for the year was 5 to 10 inches greater than the normal. An excess of 3 to 6 inches was noted along the Nova Scotia coast.

YEARS OF GREATEST PRECIPITATION.

At the following-named regular stations of the Weather Bureau the precipitation for 1891 was the greatest ever reported by the amounts given: Saint Vincent, Minn., 28.35 inches, 5.87 inches greater than for 1882; Denver, Colo., 21.43 inches, 1.31 inch greater than for 1876; Montrose, Colo., 11.38 inches, 1.14 inch greater than for 1885; and Roseburgh, Oregon, 46.90 inches, 1.87 inch greater than for 1879.

The greatest yearly precipitation commonly occurs on the extreme north Pacific coast, where it averages about 100 inches at Neah Bay. In 1886 the precipitation at that station was 123.23 inches, and in 1891 it was 121.21 inches. On the middle and south Pacific coasts the greatest yearly precipitation occurred in 1884, when it varied from 34.92 inches at Sacramento, Cal., and 38.82 inches at San Francisco, Cal., to 40.39 inches at Los Angeles, Cal., and 27.59 inches at San Diego, Cal. The heaviest precipitation also occurred over the south part of the platean region in 1884, when it varied from 5.86 inches at Yuma, Ariz., to 18.30 inches at El Paso, Tex., and 23.50 inches at Fort Stanton, N. Mex. From the middle Missouri valley over the western Lake region the precipitation was greatest in 1881, the greatest amount, 56.81, being noted at Des Moines, Iowa; in the middle Mississippi and lower Ohio valleys in 1876 and 1882, the greatest amount, 75.54 inches, being measured at Little Rock, Ark., in 1882; in the lower lake region, New York, and central New England in 1878, when 60.24 inches fell at Buffalo, N. Y., and 65.53 inches at Boston, Mass.; in Maryland, the District of Columbia, and Virginia in 1889, when the amount for the year exceeded 60 inches; and on the North Carolina coast in 1877, when more than 102 inches fell at Hatteras.

YEARS OF LEAST PRECIPITATION.

At the following-named regular stations of the Weather Bureau the precipitation for 1891 was the least ever reported by the amounts given: Eastport, Me., 36.44 inches, 5.82 inches less than for 1889; Kitty Hawk, N. C., 42.64 inches, 2.56 inches less than for 1887; Jacksonville, Fla., 41.34 inches, 4.88 inches less than for 1889; Pensacola, Fla., 35.58 inches, 11.44 inches less than for 1890; New Orleans, La., 38.62 inches, 3.55 inches less than for 1890; Shreveport, La., 36.00 inches, 4.54 inches less than for 1890; Abilene, Tex., 17.57 inches, 1.57 inch less than for 1887; El Paso, Tex., 2.22 inches, 4.54 inches less than for 1887; Erie, Pa., 30.24 inches, 1.70 inch less than for 1888; and Chicago, Ill., 26.54 inches, 0.23 inch less than for 1886.

From the north Pacific coast to the Red River of the North Valley, in parts of Colorado and New Mexico, in the interior of the east Gulf states, and over the central Lake region the least precipitation occurred in 1889. In other sections the years of least precipitation varied. On the south Pacific coast the precipitation was least in 1881, when it was 5.00 to 6.00 inches. At Yuma, Ariz., it was least in 1880, when the total amount was but 0.74 inch. In New England the least monthly precipitation noted, 27.18 inches, occurred at Block Island, R. I., in 1888; in the middle Atlantic states, 30.21 inches at Philadelphia, Pa., in 1881; and in the south Atlantic states, 38.00 inches at Savannah, Ga., in 1881.

NOTABLE METEOROLOGICAL FEATURES OF 1891.

The following are among the more notable meteorological features of the year:

January was unusually warm in the central and northern districts. In Montana and North Dakota the mean temperature was more than 20° above the normal, and from the Red River of the North to the north Pacific coast the month was the warmest January on record. At points in the middle Atlantic and New England states, Upper Michigan, Nebraska, southeastern Wyoming, and Texas the monthly precipitation was the greatest, and at Detroit, Mich., in Montana and eastern Washington, and at San Francisco, Cal., it was the least ever reported for January. On the 7th one person was killed, several were seriously injured, and a number of houses were destroyed by a tornado near Shiner and Yoakum, Tex. On the 31st one person was fatally hurt, several were seriously injured, and buildings were destroyed to the estimated value of $10,000 at Palo Alto, Miss., by a tornado. The Monongahela River rose above the danger-line at Pittsburg, Pa., on the 3d, and a part of Allegheny City was flooded. At Cincinnati, Ohio, the Ohio River rose until the 6th, flooding basements at points along the river front. Vegetation was reported damaged by drought about San Diego and Santa Cruz, Cal.

In February destructive floods occurred in California, Arizona, and along the Ohio River and tributaries. At Yuma, Ariz., private property was destroyed by flood to the estimated value of over $300,000. Along the Ohio River and tributaries large areas were flooded and immense damage was caused. The Mississippi River passed the danger-line at points south of Cairo, Ill. Floods and high water occurred in the rivers and streams of central and eastern Pennsylvania and central and eastern New York. Tornadoes were reported as follows: 9th, Helena, Ark.; damage, $5,000. 24th, Troy, Mo.; damage, $2,000. About midnight 24–25th, Utica, Ind.; damage, $6,000. The lower Connecticut River was open on the 11th, and the Hudson River was open from Newburgh to New York City on the 25th.

March was unusually cold, except in extreme northeast and southeast districts and along the middle and south Pacific coasts; and from the lower Missouri valley to central Texas and thence westward to the Rocky Mountains the month was the coldest March on record. The precipitation was in excess

of the March average, except in northwest, southwest, and extreme northeast parts of the country, and at Lake Erie stations and at stations in the southeastern, north-central, and central districts the monthly precipitation was the greatest on record for March. A severe "norther" prevailed in California and Nevada on the 17–18th. Nineteen persons were drowned on the North Carolina coast, and 7 persons on the Virginia coast by shipwreck. The first boat of the season arrived at Albany, N. Y., from New York City, on the 25th. Navigation was open on the Morris Canal, New Jersey, on the 30th. On the Mississippi River navigation was open at Davenport, Iowa, on the 25th, and the river was clear of ice at Saint Paul, Minn., on the 30th. The lower Mississippi River continued high, and several crevasses were reported in the levees in Mississippi and Louisiana; no serious damage was caused. The Ohio River subsided rapidly. Damaging floods occurred along the Cumberland, Tennessee, Savannah, Little Colorado, and Sacramento rivers.

April was warmer than usual, except on the Pacific coast, and thence over the southern part of the country to Florida. On the 7th the coldest weather on record for the season prevailed over Florida. From the 3d to 7th frost injured fruit and tender vegetation in the Gulf and south Atlantic states, and in Florida as far south as Lee County and Jupiter Inlet. On the 15th a tornado visited Hansford, Tex., killing two persons, and destroying property to the value of about $25,000. Numerous casualties by lightning were reported. The lower Mississippi River continued above the danger-line, and several breaks in the levees occurred. Navigation opened generally on the Great Lakes. Over a great part of the south Atlantic and east Gulf states and Louisiana dry weather impeded farming operations.

May was cooler than usual, except in some of the northern districts; and at points in the south Atlantic and west Gulf states, the Ohio Valley, and southwestern Arizona it was the coolest May on record. East of the Rocky Mountains the monthly precipitation was generally deficient, and over the Rocky Mountain and plateau regions and on the middle Pacific coast it was in excess of the average. On the 20th a tornado moved eastward over Boone and Audrian counties, Mo., killing 4 persons, injuring 35 or more, and destroying property to the estimated value of over $100,000. High water in the Rio Grande River caused great destruction of property in New Mexico and western Texas, and the Pecos River was the highest ever known. The lower Mississippi River fell below the danger-line. Heavy and unusually late frosts occurred as far south as Tennessee and North Carolina.

In June the mean temperature was above the normal east of the Mississippi River. West of the Mississippi and in the extreme northeast the month was cooler than usual. Exceptionally heavy and destructive rainstorms occurred in the states of the lower Missouri valley during the second and third decades of the month, and in localities in that section serious damage was caused to crops. On the 14th a well-defined tornado visited the suburbs of Milwaukee, Wis., damaging property to the estimated value of $4,000. On the 16th a storm with some of the characteristics of a tornado visited Bayonne, N. J. Destructive floods occurred in the states of the central valleys west of the Mississippi River.

In July the mean temperature was the lowest on record for the month from the middle-eastern Rocky Mountain slope to the Atlantic coast, and on the middle and south Pacific coasts the month was the warmest July on record. Frost occurred in New England, New York, Pennsylvania, the upper lake region, Wisconsin, Minnesota, and South Dakota, and from the Dakotas to Michigan, and in Connecticut tender vegetation was injured by frost. On the 6th 10 persons were killed and a number injured by a tornado at Baton Rouge, La., and a tornado visited southern Maryland on the 18th, seriously injuring 5 persons. Flood caused considerable damage along the Missouri River south of Pierre, S. Dak.

In August the month was warmer than usual, except in the central valleys and along the Saint Lawrence River, and on the Pacific coast it was the warmest August on record. During the third decade of the month the temperature was the lowest ever reported for August from the Lake region and the Dakotas to the Gulf of Mexico, and heavy frost occurred from the middle and northeast slopes of the Rocky Mountains to western New York. Snow was reported in the Paradise Mountains, Nevada, on the 6th, and during the cool wave of the third decade it was noted in northwest Wisconsin, and at Buffalo, N. Y. The night of the 18th a cyclone devastated the Island of Martinique, Windward West Indies, killing about 700 persons, injuring many, and destroying property to the value of about $10,000,000. Well-defined auroral displays were reported over the northern part of the country from New England to Washington the night of the 28–29th.

In September the mean temperature was the highest on record for the month in the north-central districts and at stations on the east New England coast. Frost occurred in the northern tier of states as far south as the Ohio and lower Missouri valleys, Colorado, and Utah, and in Oregon and north California. The first snow of the season was reported at elevated stations in the middle and northern Rocky Mountain and plateau regions during the third decade of the month, and in the mountains of Colorado a depth of 5 to 10 inches was noted. On the 11th auroras were reported from the Atlantic to the Pacific coasts and southward in the central valleys to the 40th parallel. Navigation on the middle and lower Mississippi River and tributaries was rendered difficult on account of low water.

In October the mean temperature was the highest ever reported for the month at points in Montana, Oregon, and Washington; and at stations in the south Atlantic and east Gulf states it was the coolest October on record. Heavy frost occurred as far south as southern Georgia, central Alabama, and central Louisiana, and light frost was reported in the interior of the Florida Peninsula to the 28th parallel. The monthly precipitation was the greatest ever reported for October on the middle Virginia coast, in northeast Kansas, and southern Montana, and was the least recorded for the month at stations in the Gulf states, the central Ohio valley, the upper lake region, in the Southwest, and in southern California. On the northeast slope of the Rocky Mountains and in northwest North Dakota snow fell to a depth of 10 to 15 inches, and snow fell as far south as southern Kansas, central Kentucky, and western North Carolina. Damaging drought prevailed in the Southern and Southwestern States and in parts of the Middle and Western States. Rivers and streams in the Southern States were very low, and navigation on the Ohio and Mississippi rivers was rendered difficult on account of low water.

The November temperatures were the highest ever reported for that month at stations in the plateau region and on the Pacific coast. The monthly precipitation was the heaviest ever reported for November at stations on the north Pacific coast, in the upper Missouri valley, from the central lake region over the upper Ohio valley, and in northern Arkansas and western Florida; and at points west of the lower Mississippi and lower Missouri valleys it was the least ever reported for November. Storms of exceptional severity occurred over the middle Atlantic states and the lower lake region on the 23d, resulting in loss of life and destruction of property. By the close of the month navigation in the northern rivers was generally closed for the season.

In December the mean temperature was the highest ever noted for that month from eastern New York and eastern Pennsylvania over New England; and at stations in the middle and southern plateau regions and on the middle and south Pacific coasts the month was the coolest December on record. Over the eastern part of the country the snowfall was very deficient. The weather was unusually stormy on the north Pacific coast. Navigation closed at a number of ports on the Great Lakes, and rivers in the northern tier of states were generally frozen.

Annual summary for 1891—*Weather Bureau stations.*

State and station.	Temperature—degrees Fahrenheit.						Precipitation in inches.		
	Mean annual.	Departure from normal.	Extremes for 1891.				Total 1891.	Departure from normal.	Percentage of normal.
			Max.	Date of max.	Min.	Date of min.			
	°	°	°		°		*Inches.*	*Inches.*	
Alabama.									
Auburn	62.4	.....	95	June 4	12	Nov. 12	49.36	.....	....
Mobile	66.4	−0.3	96	June 29	28	Nov. 30	57.07	− 5.87	91
Montgomery	65.5	+0.1	99	June 5	23	Nov. 30	51.05	− 1.96	96
Arizona.									
Yuma	71.4	−0.9	116	June 29	25	Dec. 25	2.67	− 0.50	84
Arkansas.									
Fort Smith	59.7	+0.3	97	July 22	14	Feb. 26	40.49	− 4.72	89
Little Rock	60.9	−0.7	96	June 26	20	Nov. 29	51.41	− 3.06	94
California.									
Eureka	52.2	+0.8	75	Oct. 26	30	Dec. 25	45.80	+ 0.58	101
Fresno	63.0	−1.6	114	July 1	26	Jan. 11	8.94	− 0.86	91
Keeler	59.9	−0.9	101	Aug. 23	17	Dec. 25	2.53	− 1.25	68
Los Angeles	63.0	+1.6	109	July 25	33	Feb. 9 Dec. 7	12.84	− 5.54	70
Point Reyes Light	52.4	.....	88	Aug. 22	34	Dec. 9, 25	26.69	.....	....
Red Bluff	62.4	−0.6	114	Aug. 12	26	Jan. 10 Dec. 25	23.04	− 3.33	88
Sacramento	60.6	+1.0	106	Aug. 22	26	Dec. 25	15.63	− 6.23	72
San Diego	61.2	+0.4	89	Sept. 7	32	Dec. 26	8.99	− 1.99	82
San Francisco	56.6	+0.6	100	June 29	37	Dec. 25	21.11	− 3.19	87
Colorado.									
Denver	48.0	−1.3	94	Aug. 13	−7	Jan. 10	21.43	+ 7.12	141
Montrose	46.8	−1.7	92	July 17	−17	Dec. 25	11.38	+ 2.02	122
Pueblo	50.2	.....	98	Aug. 15	−13	Jan. 10	13.09	.....	....
Connecticut.									
New Haven	50.4	+1.0	93	June 16	3	Mar. 2	44.69	− 5.53	89
New London	50.2	+0.7	92	Aug. 10	7	Feb. 15 Mar. 2	48.73	− 0.38	99
District of Columbia.									
Washington City	55.4	+0.7	95	Aug. 10	15	Dec. 18	52.95	+ 8.29	121
Florida.									
Jacksonville	69.2	+0.2	100	June 28	30	Jan. 14	41.34	−14.61	74
Jupiter	73.6	−0.3	92	June 30	38	Jan. 14	57.62	+ 1.22	102
Key West	76.1	−1.1	92	Aug. 4	53	Jan. 14	39.75	− 0.28	99
Pensacola	67.3	−0.4	95	June 28	29	Nov. 30	35.58	−26.55	57
Tampa	71.6	.....	95	June 5	33	Jan. 14	44.46	.....	....
Titusville	71.2	+0.3	96	Aug. 19	34	Jan. 14	60.18	+ 6.15	110
Georgia.									
Atlanta	60.6	−0.4	94	June 26	18	Nov. 18	49.97	− 4.86	91
Augusta	63.8	−0.2	98	June 4	22	Dec. 1	47.76	− 0.63	99
Savannah	66.1	−0.5	97	June 27	27	Dec. 1	44.77	− 7.28	86
Illinois.									
Cairo	57.9	+0.1	93	June 3	14	Nov. 29	39.56	− 4.36	90
Chicago	48.5	0.0	96	Aug. 9	−8	Feb. 4	20.54	− 9.46	74
Springfield	52.4	0.0	95	June 27	−5	Feb. 4	33.27	− 6.35	84
Indiana.									
Indianapolis	53.5	+0.8	94	Aug. 10	−3	Feb. 4	38.23	− 6.94	85
Iowa.									
Davenport	49.4	+0.2	94	Aug. 8	−10	Nov. 29	31.45	− 3.42	90
Des Moines	48.7	+0.4	93	Aug. 8	−10	Feb. 28	30.14	− 5.33	85
Dubuque	45.3	+0.6	96	Aug. 8, 9	−13	Feb. 4	27.55	−10.10	73
Keokuk	51.5	0.0	95	Aug. 8, 9	−6	Feb. 28	33.24	− 2.78	92
Sioux City	47.0	.....	98	Aug. 8	−17	Feb. 3	33.29	.....	....
Kansas.									
Concordia	53.4	+1.1	100	Aug. 8	−3	Feb. 28	34.47	+ 8.70	134
Dodge City	52.6	−0.4	99	July 12	0	Jan. 16	32.34	+12.11	160
Leavenworth	53.1	0.0	96	Aug. 9	−2	Feb. 28	37.71	− 0.51	96
Topeka	53.9	+2.0	97	Aug. 18	−1	Feb. 28 Mar. 4	43.28	+ 9.65	128
Wichita	55.0	.....	98	Aug. 16	4	Feb. 3	34.53	+ 5.16	118
Kentucky.									
Lexington	56.1	+0.1	92	Aug. 9	8	Feb. 4	45.51	.....	....
Louisville	57.5	+0.7	95	June 27	7	Feb. 4	43.42	− 3.98	92
Louisiana.									
New Orleans	68.6	−0.4	94	June 24, 30	30	Nov. 30	38.62	−24.32	60
Shreveport	64.5	−0.9	97	June 2 Aug. 21	25	Feb. 10 Nov. 30	36.00	−15.57	70
Maine.									
Eastport	42.8	+1.6	79	June 13	−8	Feb. 5	36.44	−13.33	73
Portland	45.8	−0.3	95	June 16	−4	Feb. 5	43.28	+ 0.62	101
Maryland.									
Baltimore	53.5	+0.2	94	Aug. 11	16	Mar. 2	54.21	+ 9.90	122
Massachusetts.									
Boston	50.4	+2.1	96	June 16	2	Feb. 5	39.70	− 6.72	86
Nantucket	49.5	+1.2	84	Aug. 10	10	Feb. 5 Mar. 2	34.83	− 6.66	84
Vineyard Haven	52.1	.....	90	Aug. 11	10	Feb. 5 Mar. 2	41.77	.....	....
Woods Holl	49.5	+0.5	83	Aug. 10	9	Feb. 5 Mar. 2	45.19	+ 0.32	101
Michigan.									
Alpena	43.5	+2.7	91	Sept. 24	−8	Mar. 1	31.61	− 5.09	86
Detroit	49.2	+1.1	96	Aug. 9	2	Feb. 4	28.83	− 3.95	88
Escanaba	42.6	+2.5	91	Aug. 9	−22	Feb. 4 Mar. 11	24.83	− 6.98	78
Grand Haven	47.0	+0.7	88	Aug. 8	11	Feb. 4	26.26	−10.47	71
Manistee	45.4	.....	91	Aug. 8	2	Feb. 19	28.79	.....	....
Marquette	41.5	+0.9	94	June 14	−12	Feb. 4	33.78	+ 1.08	103
Port Huron	46.8	+2.0	99	Aug. 9	2	Feb. 4	33.81	+ 1.65	105
Sault de Ste. Marie	40.2	+1.4	89	Aug. 7	−25	Feb. 4	29.56	.....	....
Minnesota.									
Duluth	39.8	+0.6	90	Sept. 17	−22	Feb. 4	29.47	− 2.60	92
Moorhead	38.9	+2.1	96	Aug. 7	−35	Feb. 28	24.31	− 0.06	100
Saint Paul	44.0	+1.4	95	Aug. 7, 8	−25	Feb. 4	21.79	− 5.81	79
Saint Vincent	36.1	+3.2	92	May 7	−34	Feb. 28	28.35	+11.20	165
Red Wing	44.5	.....	96	Aug. 8	−28	Feb. 4	28.93	.....	....
Mississippi.									
Meridian	63.3	.....	98	June 28	20	Dec. 1	63.57	.....	....
University	61.5	.....	97	Sept. 22	16	Nov. 30	57.44	+ 7.36	114
Vicksburg	65.3	−0.2	96	June 25	22	Nov. 30	50.54	− 6.95	87

Annual summary for 1891—*Weather Bureau stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.						Precipitation in inches.		
	Mean annual.	Departure from normal.	Extremes for 1891.				Total 1891.	Departure from normal.	Percentage of normal.
			Max.	Date of max.	Min.	Date of min.			
	°	°	°		°		*Inches.*	*Inches.*	
Missouri.									
Columbia	54.7	.....	96	Aug. 7 Sept. 22	−2	Feb. 28	37.15	− 0.73	98
Kansas City	53.3	−1.5	95	Aug. 9	−4	Feb. 28	37.03	+ 1.97	104
Saint Louis	56.2	+0.6	96	Aug. 10	4	Feb. 4	30.53	− 7.84	82
Springfield	55.2	.....	94	Aug. 18	6	Feb. 3	39.11	− 9.67	80
Montana.									
Fort Assinaboine	41.4	+0.6	92	May 6	−34	Feb. 27 Mar. 3	17.08	+ 2.40	116
Helena	42.9	−0.4	89	July 25 Aug. 30	−24	Feb. 2	19.39	+ 6.86	150
Nebraska.									
Crete	50.0	+1.5	94	July 12	−12	Feb. 28	38.44	+13.74	155
North Platte	47.6	0.0	97	Aug. 8	−14	Feb. 28	23.36	+ 4.57	124
Omaha	49.7	+0.2	97	Aug. 8	−9	Feb. 3, 28	34.92	+ 1.98	106
Valentine	45.5	−1.0	99	Aug. 7	−26	Mar. 4	27.77	+ 8.84	146
Nevada.									
Carson City	49.2	−1.8	92	June 30	0	Dec. 31	18.08	+ 7.49	171
Winnemucca	48.0	−1.5	98	July 24	−8	Dec. 25	9.68	+ 0.84	110
New Hampshire.									
Manchester	47.7	+3.3	96	June 16	−7	Feb. 5	34.34	− 8.72	79
New Jersey.									
Atlantic City	52.7	+0.9	91	June 26	14	Feb. 5	43.14	+ 0.35	101
New Brunswick	52.6	.....	98	June 16	8	Mar. 2	43.77	.....	....
New Mexico.									
Santa Fé	47.3	−0.8	87	July 22	−6	Feb. 9	16.79	+ 3.30	124
Fort Stanton	50.3	−0.1	92	Aug. 21	−6	Jan. 13	14.68	− 3.04	83
New York.									
Albany	49.4	+1.3	90	June 16	−5	Feb. 15	41.68	+ 3.06	108
Buffalo	47.9	+1.6	90	July 22 June 15	4	Mar. 2	30.74	− 7.57	80
New York City	53.8	+2.4	94	Aug. 10	9	Mar. 2	41.44	− 4.03	91
Oswego	46.6	+0.1	90	July 13	1	Jan. 4	31.44	− 3.84	89
Rochester	48.7	+2.1	94	June 15	6	Mar. 2	33.64	− 1.62	95
North Carolina.									
Charlotte	59.7	−0.3	95	June 26, 27	19	Nov. 30	52.50	− 1.27	98
Hatteras	62.4	+1.2	87	June 26	30	Mar. 15	59.50	− 9.42	86
Raleigh	59.2	−0.3	95	June 17	17	Nov. 30	63.41	+ 5.34	109
Southport	62.8	+0.1	92	June 27	22	Dec. 1	49.58	− 0.58	98
Wilmington	63.2	+0.1	95	June 21	23	Dec. 1	48.00	− 8.66	85
Kitty Hawk	60.6	+1.1	92		26	Mar. 15 Dec. 6	42.64	−36.54	54
North Dakota.									
Bismarck	40.7	+1.1	94	Aug. 5	−33	Mar. 4	20.50	+ 1.64	108
Fort Buford	39.6	+1.0	97	Aug. 18	−34	Feb. 2	18.98	+ 5.11	136
Ohio.									
Cincinnati	54.7	−0.6	92	Aug. 9	4	Feb. 4	38.44	− 2.87	93
Cleveland	50.4	+1.6	96	Aug. 9	7	Feb. 5	34.18	− 3.21	91
Columbus	52.6	+0.6	94	Aug. 10	5	Feb. 4	42.05	+ 1.77	104
Sandusky	51.3	+1.4	98	Aug. 9	6	Feb. 4	30.69	− 5.11	86
Toledo	50.3	+0.5	96	Aug. 10	4	Feb. 4	22.12	− 9.76	69
Oklahoma.									
Oklahoma City	58.1	.....	99	Aug. 20	10	Jan. 13 Feb. 3	37.43	.....	....
Oregon.									
Baker City	44.7	−0.7	98	July 24	−11	Feb. 2	18.23	+ 5.73	146
Portland	53.7	+1.2	102	July 23	23	Mar. 3	47.41	− 1.92	96
Roseburgh	54.1	+1.3	102	July 23	24	Feb. 9	46.90	+12.59	136
Pennsylvania.									
Erie	49.3	+0.5	89	Aug. 9	0	Feb. 5	30.24	−12.16	71
Harrisburg	52.6	+0.4	93	June 15	10	Mar. 2	43.40	− 6.42	87
Philadelphia	55.1	+1.8	97	Aug. 10	12	Mar. 2	38.19	− 2.62	93
Pittsburg	53.8	+1.6	94	Aug. 10	9	Feb. 4	38.28	+ 0.04	100
Rhode Island.									
Block Island	50.0	+0.9	85	Aug. 10	9	Mar. 2	39.03	− 5.82	87
Narragansett Pier	50.9	+2.5	94	Aug. 10	4	Mar. 2	44.46	− 4.12	91
South Carolina.									
Charleston	66.0	+0.2	95	July 4	29	Dec. 1 Feb. 27	45.50	−11.34	80
Columbia	62.5	−0.9	100	May 23	19	Dec. 1	46.37	.....	....
South Dakota.									
Huron	43.1	+1.5	97	Aug. 7	−24	Mar. 4	20.17	− 1.57	92
Rapid City	46.1	+1.9	100	Aug. 6	−22	Feb. 2	16.75	− 3.76	81
Pierre	45.7	.....	104	Aug. 7	−24	Mar. 4	14.00	.....	....
Tennessee.									
Chattanooga	60.5	+0.7	96	June 6	18	Nov. 18	58.73	+ 1.91	103
Knoxville	58.2	+0.7	93	June 3	18	Nov. 18	46.61	− 6.57	87
Memphis	61.6	+0.5	97	June 28	20	Nov. 29	51.31	− 2.81	94
Nashville	59.3	0.0	97	June 26	17	Nov. 30	52.82	+ 0.92	101
Texas.									
Abilene	63.0	−0.1	104	June 19	15	Jan. 11	17.57	− 8.05	68
Corpus Christi	69.5	−0.1	95	July 27	33	Jan. 11	25.63	−11.85	68
El Paso	63.3	0.0	104	July 20	8	Dec. 8	2.22	− 8.31	21
Galveston	69.0	−0.9	92	July 18	34	Feb. 10	41.51	− 9.96	81
Palestine	64.8	+0.1	96	Aug. 21	21	Feb. 26	45.27	− 1.09	97
Rio Grande City	73.5	+0.5	105	July 7 Aug. 22	25	Dec. 27	17.03	− 5.95	74
San Antonio	68.1	−0.2	104	July 7	25	Jan. 13	30.04	− 2.09	93
Utah.									
Salt Lake City	50.6	−1.0	98	July 17	0	Dec. 25	15.92	+ 1.40	109
Vermont.									
Northfield	42.6	+3.1	91	June 15, 16	−17	Feb. 5	31.11	−14.78	67
Virginia.									
Cape Henry	59.0	+0.4	96	Aug. 10	22	Dec. 18	49.16	− 4.30	92
Lynchburgh	56.6	−0.4	94	Aug. 10	16	Nov. 30	49.97	+ 5.78	113
Norfolk	59.6	+0.5	97	June 17	22	Dec. 1	50.63	− 1.65	96
West Virginia.									
Parkersburgh	53.8	.....	94	Aug. 10	8	Feb. 4	41.84	.....	....
Washington.									
Fort Canby	51.0	+0.6	87	July 22	30	Feb. 2	72.01	+13.35	123
Neah Bay	49.8	.....	74	Aug. 16	22	Mar. 3	121.21	.....	....
Olympia	50.7	+1.0	96	July 23	21	Mar. 3	58.73	+ 7.90	115

Annual summary for 1891—*Weather Bureau stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.						Precipitation in inches.		
	Mean annual.	Departure from normal.	Extremes for 1891.				Total 1891.	Departure from normal.	Percentage of normal.
			Max.	Date of max.	Min.	Date of min.			
Washington—Cont'd.	°	°	°		°		*Inches.*	*Inches.*	
Spokane Falls	49.0	+1.3	97	July 24	−10	Mar. 3	16.69	− 1.58	91
Walla Walla	54.2	+0.8	108	July 24	2	Mar. 3	16.11	+ 0.80	105
Wisconsin.									
Green Bay	45.0	+2.8	96	Aug. 8	−21	Feb. 4	26.03	− 8.70	75
La Crosse	48.2	+2.0	97	Aug. 8	−24	Feb. 4	26.98	− 5.06	84
Milwaukee	46.7	+1.8	96	Aug. 9	−12	Feb. 4	29.76	− 2.87	91
Wyoming.									
Cheyenne	44.1	−0.3	89	Aug. 13	− 7	Feb. 2	18.97	+ 7.18	161
Fort McKinney	43.2	.....	89	Aug. 18	−25	Feb. 2	14.19	.....	....

Annual summary for 1891—*Voluntary stations.*

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
Alabama.	°	°		°		*Inches.*
Bermuda	63.5	97	June....	21	Jan	39.64
Bessemer	62.2	98	Aug	19	Dec	55.43
Brewton	66.2	103	June....	23	Nov	50.48
Citronelle	67.9	100	June....	24	Feb	45.69
Greensborough	65.6	97	June....	24	Feb	48.40
Livingston	62.6	98	June....	21	Nov	50.24
Mount Vernon Barracks	65.9	100	June....	21	Jan	56.40
Tuscumbia	59.0	95	June....	19	Nov	53.16
Valley Head	57.7	95	June....	13	Nov	60.94
Alaska.						
Juneau	42.4	88	July	1	Dec	95.76
Killisnoo	40.1	84	July	2	Feb	63.49
Arizona.						
Arizona Canal Company's Dam	68.5	118	July	19	Dec	7.16
Bisbee	60.0	98	July	15	Dec	14.34
Casa Grande	71.2	116	June....	20	Dec	3.62
Florence	67.5	118	Aug	17	Dec	8.24
Fort Apache	52.9	97	July	−14	Dec	13.36
Fort Bowie	62.4	103	July	15	Dec	8.05
Fort Grant	60.8	100	Aug	15	Dec	12.21
Fort Huachuca	56.8	100	July	7	Dec	10.84
Gila Bend	75.0	118	June....	28	Dec	2.68
Holbrook	52.2	101	July	− 7	Dec	6.76
Maricopa	73.5	120	Aug	32	Dec	3.01
Pantano	64.6	106	July	25	Dec	9.87
Peoria	67.5	112	July	15	Dec	5.12
San Carlos	64.8	117	July	11	Dec	11.00
San Simon	66.7	112	July	16	Jan	4.04
Signal	67.3	113	June....	18	Dec	7.15
Tucson (1)	67.4	109	June....	15	Dec	7.30
Tucson (2)	70.9	109	July	22	Dec	6.61
Whipple Barracks	52.0	98	June....	− 2	Dec	14.66
Willcox	65.3	108	June....	9	Jan	7.36
Arkansas.						
Brinkley	60.5	99	June....	20	Nov	48.08
Camden	61.9	96	June....	21	Nov	44.82
Conway	59.3	93	Aug	19	Mar	48.87
Dallas	59.2	98	July	15	Feb	46.82
Devalls Bluff	60.8	99	Sept	14	Nov	36.80
Fayetteville	56.2	96	Aug	6	Feb	34.58
Forrest City	63.8	96	June....	19	Nov	49.07
Helena	61.9	100	June....	19	Nov	55.32
Hot Springs	60.3	100	Aug	16	Nov	63.09
Lead Hill	58.9	108	Aug	12	Nov	35.21
Lonoke	63.6	100	June....	19	Nov	49.89
Mount Nebo	58.0	89	June....	12	Feb	37.09
Osceola	59.3	95	Aug	17	Nov	51.41
Ozone	56.5	90	June....	10	Mar	48.57
Pine Bluff	62.2	98	June....	19	Nov	43.61
Stuttgart	60.8	97	June....	16	Nov	50.33
Winslow	57.1	82	July	6	Feb	42.44
California.						
Alcalde	65.9	115	July	25	Jan	11.01
Alcatraz Island	54.3	95	June....	35	Feb	25.01
Almaden	59.3	108	July	30	Dec	24.16
Anaheim	64.6	106	July	36	Dec	13.53
Angel Island	56.5	91	June....	32	Dec	22.96
Antioch	62.9	106	July	28	Jan	15.15
Aptos	56.5	90	Oct	22	Dec	29.27
Athlone	64.4	115	July	25	Jan	10.84
Auburn	60.7	108	June....	28	Dec	26.52
Bakersfield	67.3	114	July	29	Feb	2.66
Beaumont	62.8	110	June....	24	Dec	18.93
Berendo	63.0	118	July	28	Jan	9.58
Berkeley	55.8	101	June....	32	Dec	28.98
Bishop Creek	52.3	106	June....	6	Dec	10.62
Borden	63.1	114	June....	26	Dec	7.56
Boulder Creek	55.0	115	June....	20	Dec	65.58
Brentwood	61.7	109	July	25	Dec	13.84
Brighton	64.3	113	July	27	Feb	13.35
Byron	65.2	110	Aug	26	Dec	12.50
Caliente	64.9	113	July	27	Jan	9.42
Castroville	59.4	88	June....	27	Dec	16.31
Centreville	61.8	110	Aug	.....	.....	18.42
Chico	65.1	117	July	20	Dec	19.79
Cisco	42.6	90	Aug	8	Dec	36.23
Colfax	59.2	105	Aug	21	Dec	46.30

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
California—Continued.	°	°		°		*Inches.*
Colton	63.2	112	July	25	Dec	9.30
Corning	64.0	112	July	28	Jan	21.26
Davisville	64.3	110	June....	29	Dec	18.46
Delano	65.6	114	July	29	Dec	5.39
Downey	64.7	102	Aug	26	Dec	12.67
Dunnigan	63.9	104	Aug	27	Jan	18.80
El Dorado	60.5	110	July	25	Dec	31.22
Elmira	61.1	112	June....	28	Jan	19.03
El Verano	59.8	108	June....	27	Jan	26.84
Esparto	64.9	110	July	28	Jan	19.50
Farmington	62.7	114	June....	22	Dec	17.20
Felton	57.7	110	Aug	20	Jan	51.65
Fernando	64.4	114	July	30	Dec	10.94
Florence	62.8	98	July	27	Dec	11.27
Folsom	64.4	116	July	28	Dec	20.77
Fort Gaston	54.9	109	June....	25	Dec	64.33
Fort Mason	57.4	94	June....	34	Dec	22.79
Fruto	64.2	110	July	30	Jan	19.94
Galt	64.4	111	July	27	Dec	18.08
Georgetown	56.6	100	Aug	20	Dec	36.89
Gilroy	58.8	108	July	26	Jan	16.71
Girard	57.0	107	July	20	Dec	13.07
Glen Ellen	58.9	108	July	24	Dec	36.11
Goshen	62.4	112	July	25	Jan	6.00
Haywards	57.2	98	June....	31	Jan	20.72
Hollister	61.7	111	June....	24	Dec	11.55
Hornbrook	54.9	104	Aug	7	Dec	15.71
Hydesville	52.9	87	Aug	24	Feb	42.92
Ione	61.3	109	June....	20	Dec	15.33
Iowa Hill	58.1	102	June....	22	Dec	43.73
Keene	57.5	104	July	22	Jan	17.49
King City	56.8	112	June....	22	Jan	8.87
Kingsburgh	64.4	115	July	25	Jan	7.50
Knights Landing	63.1	110	July	27	Dec	15.08
Lathrop	63.1	110	June....	28	Jan	9.93
Laurel	57.7	108	June....	25	Dec	52.59
Lemoore	64.0	118	July	24	Feb	5.07
Livingston	65.2	114	Aug	23	Jan	12.72
Los Angeles	63.3	102	July	30	Jan	12.94
Los Banos	64.3	108	July	25	Jan	7.76
Los Gatos (1)	59.0	105	June....	26	Dec	33.54
Los Gatos (2)	57.1	102	July	30	Jan	35.45
Martinez	57.0	94	June....	26	Dec	17.15
Marysville	67.2	100	June....	25	Dec	16.94
Menlo Park	58.8	106	June....	29	Jan	18.12
Merced	62.6	114	Aug	25	Dec	8.56
Milton (near)	62.5	111	June....	26	Dec	15.29
Modesto	64.7	114	June....	28	Jan	7.77
Mohave	64.3	112	July	18	Dec	4.00
Monson	64.8	111	June....	27	Jan	9.12
Montague	56.2	105	Aug	20	Dec	10.20
Monterey (1)	55.3	96	Aug	26	Jan	13.26
Napa City	59.1	106	June....	25	Jan	20.18
Newark	60.0	101	June....	30	Jan	17.08
Newhall	62.3	116	July	16	Dec	15.35
Newman	69.9	111	Aug	28	Dec	11.43
Niles	61.6	106	June....	29	Jan	18.84
Norwalk	64.3	112	July	30	Jan	11.80
Oakland (1)	56.2	99	Aug	30	Jan	28.31
Oakland (2)	57.7	86	June....	32	Jan	23.77
Ogilby	77.3	126	June....	30	Feb	1.78
Orland	66.2	116	Aug	31	Jan	15.95
Oroville	63.9	110	June....	30	Feb	22.16
Pajaro	56.8	92	Aug	26	Feb	21.08
Paso Robles	58.9	110	June....	15	Dec	16.63
Petaluma	58.6	104	June....	26	Dec	20.64
Placerville (1)	59.4	106	June....	22	Dec	39.10
Pleasanton	60.2	108	July	25	Jan	10.06
Pomona	64.5	110	July	22	Dec	14.27
Portersville	65.6	115	June....	29	Jan	8.68
Presidio of San Francisco	55.2	97	June....	31	Dec	23.44
Puente	64.4	110	July	27	Jan	14.67
Ravenna	61.5	110	June....	26	Jan	.....
Red Bluff	63.3	111	Aug	27	Dec	19.80
Redding	63.1	116	July	27	Dec	31.41
Riverside	61.3	112	July	21	Dec	9.24
Rocklin	65.0	112	June....	29	Dec	17.87
Rumsey	66.0	111	Aug	30	Jan	25.01
Sacramento (1)	54.9	98	June....	20	Dec	16.80
Sacramento (2)	61.4	98	June....	29	Dec	11.23
Salinas	55.0	90	June....	25	Dec	15.43
Salton	73.8	118	July	18	Dec	1.87
Sanger Junction	66.4	119	July	27	Jan	7.47
San Ardo (1)	59.5	114	Aug	20	Dec	7.96
San Gabriel	63.8	116	July	26	Dec	14.47
San José	58.8	104	June....	30	Jan	17.13
San Mateo	57.9	99	June....	30	Jan	24.01
San Miguel	58.7	107	June....	20	Dec	11.54
San Pedro	64.9	100	July	38	Dec	9.28
Santa Ana	64.6	108	July	29	Dec	11.62
Santa Barbara (1)	60.1	96	July	33	Dec	14.38
Santa Barbara (2)	60.9	95	July	32	Dec	15.31
Santa Cruz (1)	59.2	99	Aug	31	Dec	26.25
Santa Margarita	53.2	104	July	16	Jan	26.22
Santa Monica	62.3	88	July	30	Feb	15.68
Santa Paula	62.4	108	July	28	Dec	14.29
Santa Rosa	57.9	103	June....	27	Jan	27.87
Selma	62.6	111	Aug	27	Jan	6.77
Seven Palms	75.0	123	July	30	Dec	8.82
Shingle Springs	62.3	107	June....	25	Jan	32.54
Sims	53.3	104	Aug	12	Dec	54.47

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
California—Continued.	°	°		°		*Inches.*
Soledad	57.8	106	June....	22	Dec	7.95
Sonoma	58.4	104	Aug	27d	Jan	27.99
South Vallejo	57.9	89	Aug	30	Jan	17.31
Stockton (2)	62.2	108	July	26	Dec	11.16
Suisun City	60.8	110	June....	28	Dec	22.56
Susanville	49.1	94	July	— 1	Dec	23.85
Templeton	59.5	112	July	18	Dec	18.44
Towles	54.5	95	July	14	Dec	52.56
Tracy	65.4	106	June....	28	Jan	10.00
Traver	63.3	110	July	28	Jan	7.12
Truckee (1)	44.0	92	Aug	—14	Dec	26.85
Tulare	66.2	116	Aug	28	Dec	6.34
Turlock	63.6	111	July	28	Jan	9.24
Upper Mattole	57.4	108	Aug	28	Jan	80.25
Vacaville (1)	61.7	112	June....	31	Jan	25.26
Vacaville (2)	62.2	115	July	30	Dec	20.38
Valley Springs	61.9	105	June....	30	Jan	21.57
Vina	63.8	112	July	26	Jan	18.33
Volta	64.1	114	July	24	Dec	7.71
Walla Walla Creek	49.9	96	July	10	Dec	30.93
Walnut Creek	60.4	113	July	26	Dec	21.05
Westley	68.8	109	July	26	Jan	8.98
Wheatland	60.9	112	June....	23	Dec	15.76
Whittier	66.3	112	July	38	Dec	11.42
Williams	63.8	112	Aug	28	Jan	14.27
Willow (1)	61.0	108	June....	26	Dec	16.71
Willow (2)	60.7	112	Aug	30	Jan	18.96
Winters	67.3	114	June....	28	Jan	22.17
Woodland	59.6	104	Aug	26	Dec	14.35
Colorado.						
Climax	28.8	68	June....	—26	Dec	37.00
Como (near)	32.8	76	July	—18	Jan	15.72
Cumbres	33.7	79	July	—26	Feb	54.79
Husted	45.8	96	July	—21	Dec	17.26
Idaho Springs	42.8	89	Aug	— 9	Jan	17.72
Lamar	50.8	101	Aug	— 4	Jan	24.51
Las Animas	50.1	98	June....	— 6	Mar	11.95
Le Roy	45.1	93	Aug	—11	Feb	25.52
Monte Vista (1)	39.5	86	July	—22	Dec	9.17
Moraine	39.8	82	July	—15	Mar	20.79
San Luis	43.5	92	July	—26	Dec	18.85
T. S. Ranch	48.4	98	July	— 5	Feb	12.51
Thon	47.6	101	July	—11	Dec	17.51
Connecticut.						
Canton	49.3	97	June....	— 5	Feb	50.93
Fort Trumbull	52.3	97	Aug	8	Mar	49.21
Mansfield	47.9	92	June....	0	Mar	51.61
Middletown	49.6	96	June....	5	Mar	53.79
New Hartford	44.7	94	June....	— 6	Mar	49.80
North Grosvenor Dale	51.4	99	June....	5	Feb	48.69
Southington	49.1	93	June....	2	Mar	49.89
Voluntown	49.7	94	June....	4	Mar	55.21
Delaware.						
Dover	54.8	94	June....	15	Dec	53.07
District of Columbia.						
Washington Barracks	56.9	94	June....	15	Feb	52.46
Florida.						
Homeland	72.9	95	July	29	Jan	49.80
Hypoluxo	75.5	97	June....	42	Jan	54.62
Merritts Island	72.8	94	June....	38	Jan	48.17
Orange City	70.5	94	June....	26	Jan	63.00
Saint Francis Barracks	69.2	97	June....	30	Jan	49.19
Tallahassee	66.6	94	June....	24	Jan	44.85
Georgia.						
Athens	60.9	94	June....	22	Feb	55.04
Forsyth	65.5	100	June....	24	Feb	61.40
Fort McPherson	60.4	95	Aug	15	Feb	50.82
Gillsville	61.9	93	June....	24	Nov	52.33
Marietta	58.7	94	June....	17	Nov	51.22
Milledgeville	63.5	96	June....	24	Feb	51.97
Poulan	64.9	103	June....	22	Jan	39.20
Idaho.						
American Falls	43.8	98	July	—22	Dec	14.08
Boisé Barracks	49.5	109	July	0	Dec	13.31
Era	40.0	92	July	—17	Dec	13.64
Fort Sherman	48.3	98	July	—12	Mar	26.09
Kootenai	45.4	96	July	—12	Mar	17.90
Illinois.						
Aurora	46.8	99	Aug	—10	Feb	31.09
Beason	50.2	95	June....	— 4	Feb	33.41
East Peoria	53.1	100	June....	— 2	Feb	41.70
Fort Sheridan	47.6	102	Aug	— 5	Feb	31.52
Golconda	57.1	92	June....	12	Feb	45.32
Greenville	53.2	100	Aug	— 2	Feb	33.57
Griggsville	52.1	100	Sept	0	Feb	25.82
Hennepin	48.3	101	Aug	— 9	Nov	35.60
Jordans Grove	54.6	96	Sept	5	Feb	33.71
Lanark	46.8	94	Aug	—13	Feb	31.74
Louisville	52.7	96	Aug	3	Feb	37.07
Mascoutah	54.8	99	Aug	3	Feb	37.40
Olney (1)	55.8	100	June....	2	Feb	36.18
Olney (2)	53.6	98	Aug	3	Feb	40.39
Oswego	47.3	96	Aug	—11	Nov	31.85
Ottawa	49.7	98	Aug	— 8	Nov	35.37
Peoria	53.0	99	Aug	— 4	Feb	32.89
Philo	52.1	97	Sept	—10	Feb	28.89
Riley	46.7	95	Aug	—10	Feb	31.39
Rockford	47.4	99	Aug	—10	Feb	30.99
Rushville	50.7	98	June....	— 2	Feb	41.16
Sandwich	48.9	95	July	— 8	Nov	36.18
Sycamore	47.4	96	Aug	— 8	Feb	28.36

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
Illinois—Continued.	°	°		°		*Inches.*
White Hall	54.0	92	June....	0	Feb	28.51
Winnebago	47.4	95	Aug	—10	Feb	30.04
Indiana.						
Angola	50.4	97	Aug	— 5	Feb	37.67
Columbia City	50.4	95	Aug	— 6	Feb	32.07
Columbus	52.3	94	Aug	2	Feb	43.43
Connersville	52.3	93	Aug	1	Feb	41.06
De Gonia Springs	56.1	91	June....	9	Feb	44.22
Delphi	49.4	93	Aug	— 8	Feb	34.55
Farmland	53.1	96	Aug	— 2	Mar	41.06
Jeffersonville	56.0	94	June....	8	Feb	42.17
La Fayette	51.8	97	Aug	—12	Feb	36.65
Logansport	51.5	95	Aug	— 5	Feb	29.05
Mauzy	51.0	99	July	— 3	Feb	41.54
Princeton	55.1	96	Aug	4	Feb	36.76
Rockville	53.6	98	Aug	— 5	Feb	33.08
Shelbyville	55.1	95	July	0	Feb	42.41
Vevay	55.2	94	Aug	3	Feb	48.93
Worthington	53.3	92	June....	0	Feb	44.12
Indian Territory.						
Fort Supply	56.2	98	July	3	Mar	30.43
Healdton	62.5	102	Aug	22	Dec	29.66
Iowa.						
Alta	45.1	94	Aug	—18	Feb	49.05
Amana	47.2	94	Aug	—13	Nov	34.10
Bancroft	44.1	93	Aug	—27	Feb	26.18
Belle Plaine	47.4	94	Aug	—13	Nov	32.01
Carroll	46.2	93	Aug	—17	Feb	41.63
Cedar Falls	45.8	91	Sept	—22	Feb	29.05
Cedar Rapids	48.2	95	Aug	—12	Nov	33.25
Clarinda	49.6	93	Aug	—10	Feb	33.47
Clinton	48.1	96	Aug	—18	Nov	33.38
Cresco	43.6	95	Aug	—31	Feb	28.19
Fayette	44.8	94	Aug	—20	Nov	32.60
Fort Madison	53.5	100	Sept	— 4	Feb	30.12
Glenwood	51.7	106	Aug	—14	Feb	34.05
Greenfield	47.3	91	Aug	—14	Feb	36.15
Grinnell	47.2	93	Aug	—12	Feb	29.92
Hampton	43.8	93	Aug	—18	Feb	36.65
Independence	46.8	96	Aug	—15	Nov	28.13
Iowa City	48.7	95	Aug	—10	Nov	31.64
Larrabee	43.9	94	Sept	—24	Nov	48.61
Logan	50.2	95	Aug	—15	Feb	35.39
Maquoketa	47.5	96	Aug	—12	Nov	34.85
Monticello	47.0	95	June....	—16	Nov	27.38
Oskaloosa	49.6	93	Aug	—14	Feb	26.29
Panama	47.1	93	Aug	—11	Nov	36.58
Vinton	46.2	92	Aug	—14	Nov	28.61
Washington	51.6	98	June....	— 9	Nov	28.30
Kansas.						
Allison	47.6	94	Apr	— 3	Mar	36.79
Cawker City	52.2	100	Aug	0	Feb	30.50
Concordia	50.4	97	Aug	— 8	Mar	31.91
Cunningham	52.7	100	Aug	0	Feb	30.10
Elco	54.3	100	Aug	0	Feb	37.34
Emporia	53.9	94	Aug	2	Feb	34.92
Englewood	55.6	101	July	2	Mar	33.50
Eureka Ranch	52.6	106	Aug	— 4	Feb	24.21
Fort Leavenworth (1)	53.2	96	Aug	— 3	Feb	40.92
Fort Leavenworth (2)	52.3	98	Aug	1	Mar	38.11
Fort Riley	52.4	98	Aug	— 2	Feb	25.93
Globe	50.3	93	Aug			42.96
Gove City	50.7	104	Aug	0	Feb	20.56
Grenola	56.5	104	Aug	3	Feb	22.20
Horton	52.2	97	Aug	— 4	Feb	33.63
Independence	56.5	105	Aug	4	Feb	30.60
Kansas City	52.8	98	Aug	— 3	Feb	36.43
La Crosse	54.0	98	Sept	0	Jan	29.43
Lawrence	52.6	94	Aug	1	Feb	43.32
Lebo	53.4	101	Aug	0	Feb	40.51
Leoti	50.5	100	Aug	— 6	Dec	21.01
Manhattan (2)	52.0	102	Aug	— 4	Mar	27.73
Manhattan (3)	52.1	104	Aug	0	Mar	33.73
Minneapolis	51.8	94	Aug	— 2	Mar	35.41
Morse	51.7	94	Aug	— 4	Feb	38.41
Oswego	57.6	104	Aug	5	Feb	29.54
Pleasant Dale	49.7	97	July	— 2	Jan	32.84
Rome	55.6	102	Aug	6	Feb	32.38
Salina	53.4	95	Aug	4	Feb	28.18
Sedan	56.1	101	Aug	3	Feb	23.20
Seneca	49.8	96	Aug	—10	Feb	35.17
Tribune	49.3	99	Aug	— 2	Feb	24.01
Wakefield	53.9	104	Aug	0	Feb	32.65
Kentucky.						
Canton	57.4	97	Aug	15	Nov	55.95
Earlington	59.9	97	June....	18	Nov	47.93
Edmonton	55.3	92	June....	14	Nov	52.73
Franklin	58.5	97	Sept	12	Nov	55.76
Harrodsburgh	54.7	97	June....	10	Nov	47.40
Newport Barracks	53.8	94	Sept	5	Feb	39.20
Pellville	55.1	95	Aug	9	Feb	47.04
Shelbyville	54.5	98	Aug	8	Feb	48.84
Louisiana.						
Abbeville	68.3	95	June....	26	Nov	53.35
Baton Rouge	66.8	97	June....	25	Nov	56.22
Cheneyville	66.4	96	June....	24	Nov	68.05
Edgard	68.2	93	June....	31	Jan	60.99
Emilie	67.0	96	June....	27	Dec	63.88
Jackson Barracks	67.1	97	Aug	27	Nov	48.44
Lafayette	67.5	99	June....	26	Jan	47.83
Lake Charles	64.2	101	June....	20	Jan	54.75

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
Louisiana—Continued.	°	°		°		*Inches.*
Liberty Hill	64.7	103	June	20	Dec	52.89
Luling	66.3	97	Aug	25	Jan	66.31
Marksville	65.3	98	June	22	Nov	57.55
Maurepas	65.9	94	June	25	Jan	48.14
Melville	66.7	96	June	23	Nov	53.51
Monroe	64.7	99	June	22	Nov	45.93
New Iberia	68.3	96	Aug	25	Nov	45.54
Sugar Experimental Station	67.5	98	Aug	29	Nov	56.52
Maine.						
Cornish	46.2	92	June	—10	Feb	47.78
Fairfield	44.2	93	June	—25	Feb	38.13
Farmington	44.3	101	July	—20	Feb	43.70
Fort Preble	46.9	95	June	— 8	Feb	36.00
Kennebec Arsenal	41.7	89	June	—19	Jan	25.92
Lewiston	44.9	93	June	—19	Jan	47.72
Orono	44.4	93	June	—17	Jan	47.38
Maryland.						
Barron Creek Springs	55.2	91	June	11	Dec	54.62
Cumberland (1)	52.6	90	Aug	12	Feb	46.29
Cumberland (2)	56.7	96	June	14	Mar	44.29
Fort McHenry	54.5	93	June	14	Mar	48.48
Frederick	55.4	93	June	14	Mar	45.60
Massachusetts.						
Amherst	48.7	91	June	— 5	Feb	47.72
Amherst (Mass.) Exp. Sta	47.6	93	June	— 6	Feb	42.73
Amherst (Hatch) Exp. Sta	49.5	94	June	— 6	Feb	46.80
Blue Hill (summit)	47.9	93	June	— 1	Mar	50.27
Blue Hill (base)	49.2	93	June	1	Feb	50.78
Blue Hill (valley)	48.8	94	June	1	Mar	49.46
Cambridge	48.5	93	June	1	Feb	42.51
Chestnut Hill	50.4	96	June	0	Mar	49.63
Concord	47.8	96	June	1	Feb	40.01
Cotuit	49.0	93	Aug	6	Feb	51.35
Dudley	48.3	94	Aug	— 3	Mar	36.20
Fall River	49.7	92	Aug	6	Mar	49.89
Fitchburg (1)	47.6	93	June	— 4	Feb	45.58
Fitchburg (2)	48.0	96	June	— 4	Feb	43.59
Fort Warren	48.8	89	June	0	Dec	43.68
Framington	49.3	96	June	— 1	Feb	49.21
Gilbertville	47.4	98	June	— 2	Mar	45.82
Groton	49.0	94	June	— 3	Feb	41.02
Kendall Green	50.1	96	June	0	Jan	46.40
Lawrence	49.6	100	July	— 2	Jan	39.98
Leicester	46.6	90	June	— 4	Dec	40.65
Long Plain	50.2	96	June	3	Mar	57.09
Lowell	48.8	92	June	— 2	Feb	42.52
Ludlow	46.4	94	June	— 7	Mar	46.32
Mansfield	49.0	97	June	0	Mar	52.32
Milton	48.6	94	June	3	Mar	48.54
Monson	48.0	95	June	— 8	Mar	45.78
New Bedford (1)	48.4	90	Aug	4	Feb	47.76
New Bedford (2)	50.1	94	June	4	Mar	46.80
Newburyport	48.8	96	June	0	Feb	41.78
North Billerica	50.0	98	June	0	Feb	38.12
Provincetown	50.5	92	June	8	Feb	41.95
Somerset	52.5	99	June	4	Mar	48.91
Springfield	49.8	95	June	0	Feb	47.01
Taunton (3)	49.8	96	June	4	Feb	51.07
Taunton (4)	49.2	99	June	2	Mar	48.73
Wakefield	49.8	96	June	— 2	Mar	44.62
Westborough	51.0	99	June	— 2	Jan	41.28
Michigan.						
Adrian	48.6	99	Aug	— 5	Nov	40.20
Albion (1)	49.4	94	Aug	1	Feb	33.88
Alma	46.2	95	Aug	— 9	Mar	34.75
Ann Arbor	48.2	94	Aug	0	Feb	31.24
Atlantic Mine	36.6	77	Sept	—10	Mar	27.23
Ball Mountain	46.3	95	Aug	0	Feb	30.58
Bear Lake	44.4	93	Aug	— 6	Feb	32.07
Bellaire	43.8	95	June	—16	Mar	33.76
Berrien Springs	50.5	102	Aug	6	Mar	36.34
Birmingham	48.4	96	Aug	0	Nov	33.77
Bronson	45.6	96	Aug	— 2	Mar	29.57
Caldwell	43.6	101	Sept	—14	Mar	33.85
Calumet	40.0	92	June	— 8	Feb	24.74
Charlevoix	45.6	93	Aug	— 4	Mar	30.69
Colon	45.9	90	June	2	Feb	34.99
Concord	47.7	98	Aug	— 2	Mar	29.93
Crystal Falls	40.2	91	June	—23	Mar	20.91
Fitchburgh	46.9	99	Aug	0	Feb	33.28
Flint	46.6	98	Aug	— 4	Mar	25.03
Fort Brady	40.5	90	Aug	—31	Feb	24.19
Fort Mackinac	40.7	83	Aug	—11	Feb	28.90
Fort Wayne	48.9	100	Aug	1	Feb	28.16
Fremont	46.5	95	Aug	— 1	Feb	29.73
Grape	50.0	96	Aug	3	Feb	25.75
Grayling	43.4	97	Aug	—26	Mar	28.74
Hanover	48.9	96	Aug	2	Mar	33.06
Hart	49.5	95	June	2	Jan	32.25
Highland Station	47.0	97	Aug	— 2	Mar	29.89
Hillsdale	48.4	97	Aug	— 2	Mar	29.36
Howell	47.0	99	Aug	— 8	Mar	32.37
Ivan	44.2	103	Aug	—15	Mar	35.14
Jeddo	46.6	96	Aug	2	Feb	26.42
Kalamazoo	49.8	97	Aug	— 2	Mar	34.41
Lansing	48.0	96	Aug	— 3	Feb	29.05
Madison	48.4	94	Aug	1	Feb	35.59
Marshall	48.2	100	Aug	— 3	Mar	32.91
May	47.0	97	Aug	0	Feb	35.63
Montague	45.9	88	Aug	2	Feb	18.27
Mottville	49.1	101	Aug	— 5	Mar	29.73

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
Michigan—Continued.	°	°		°		*Inches.*
Olivet	45.9	95	Aug	— 3	Mar	28.02
Ovid	46.7	97	Aug	1	Feb	28.69
Paw Paw	48.7	100	Aug	—10	Mar	31.88
Pontiac	48.7	92	Aug	4	Feb	32.06
Saint Ignace	41.2	87	Aug	—18	Feb	29.09
Sand Beach	43.9	92	June	— 1	Feb	28.70
Thornville	48.7	98	Aug	— 1	Mar	35.94
Vandalia	49.0	96	Aug	0	Mar	33.41
Williamston	50.7	95	Aug	2	Mar	32.91
Ypsilanti	44.9	91	Aug	— 2	Nov	32.55
Minnesota.						
Alma City	43.2	92	Aug	—30	Feb	25.68
Crookston	38.7	98	Aug	—31	Feb	28.85
Farmington	44.4	96	Aug	—25	Feb	26.56
Fort Snelling	43.0	98	Aug	—35	Feb	22.97
Leech Lake	38.6	89	May	—35	Feb	24.08
Minneapolis	43.8	98	Aug	—21	Feb	26.78
Montevideo	43.7	101	Sept	—27	Feb	16.79
Morris	41.6	96	Sept	—28	Feb	23.42
Northfield	43.7	95	Aug	—27	Feb	27.78
Pine River	39.1	87	Sept	—44	Feb	19.83
Saint Charles	43.8	95	Aug	—24	Feb	33.49
Mississippi.						
Agricultural College	63.9	97	June	19	Nov	61.17
Batesville	62.5	100	Aug	16	Nov	57.52
Brookhaven	64.6	100	June	19	Nov	65.17
Canton	64.2	96	June	23	Nov	55.71
Edwards	65.6	100	June	23	Nov	53.06
Enterprise	64.3	106	June	21	Feb	58.51
Fayette	66.2	97	June	23	Nov	56.53
Greenville	64.2	96	June	22	Nov	51.24
Hattiesburgh	68.4	100	June	26	Nov	43.65
Kosciusko	62.8	95	June	19	Nov	73.70
Logtown	67.2	93	June	27	Nov	62.11
Louisville	63.9	104	Sept	19	Nov	58.28
Ship Island	69.9	96	June	29	Nov	45.98
Vaiden	62.7	104	June	17	Nov	67.31
Water Valley	61.8	105	June	16	Nov	42.01
Waynesboro	63.3	99	June	21	Dec	41.17
Missouri.						
Adrian	49.3	98	Aug	—10	Feb	39.69
Austin	55.0	98	Aug	2	Feb	38.30
Brunswick	53.3	96	June	— 8	Feb	36.97
Carrollton	52.3	94	Aug	— 3	Feb	47.51
Carthage	55.1	96	Aug	5	Feb	31.63
Conception	50.6	89	Aug	—12	Feb	46.02
Eldon	55.9	102	Aug	2	Feb	47.22
Excelsior Springs	49.7	95	Aug	—11	Mar	40.54
Fayette	53.6	98	Sept	— 4	Feb	36.46
Fox Creek	55.4	92	Aug	2	Feb	30.87
Glasgow	52.8	95	Aug	— 6	Feb	33.46
Gordonville	56.8	92	Sept	10	Jan	42.13
Jefferson	55.6	99	Sept	5	Feb	33.71
Lebanon	56.9	94	Aug	6	Feb	39.71
New Haven	54.9	102	Aug	6	Feb	28.10
Oak Ridge	59.8	104	Sept	16	Jan	39.36
Oregon	51.3	94	Aug	— 8	Feb	39.90
Platte River	51.9	94	Aug	— 6	Feb	42.63
Princeton	51.7	97	June	— 8	Feb	47.71
Saint Louis	53.9	95	Aug	4	Feb	34.30
Sedalia	53.4	96	Aug	— 5	Feb	37.30
Stellada	54.3	96	June	2	Feb	40.51
Warrensburgh	53.7	96	Aug	— 2	Feb	37.06
Montana.						
Camp Poplar River	40.8	99	Aug	—36	Mar	14.57
Choteau	42.3	90	May	—26	Mar	16.71
Fort Assinaboine	43.3	92	May	—33	Feb	19.41
Fort Keogh	43.0	103	Aug	—37	Mar	14.18
Fort Missoula	43.2	96	Aug	—22	Feb	22.43
Glendive	45.3	108	May	—34	Mar	18.37
Virginia City	40.6	87	June	—23	Feb	15.13
Nebraska.						
Bassett	46.1	100	May	—20	Feb	24.75
Burwell	46.6	96	Aug	—14	Mar	25.20
Crete	48.6	94	Aug	—12	Feb	38.44
David City	44.7	90	June	—17	Feb	42.20
De Soto	48.2	96	Aug	—11	Feb	30.45
Ericson	47.3	102	Aug	—12	Feb	26.21
Fremont	48.9	93	June	—14	Feb	31.66
Fort Niobrara	44.0	101	Aug	—38	Mar	23.70
Genoa	46.8	93	Aug	—16	Feb	37.46
Gering	46.9	97	Aug	—16	Feb	21.14
Hay Springs	43.2	97	Aug	—21	Mar	23.26
Kimball	45.6	97	Aug	—14	Feb	18.44
Lincoln	49.5	95	Aug	—12	Feb	40.08
North Loup	47.2	93	July	—22	Feb	30.96
Oakdale	45.4	96	Aug	—26	Feb	35.63
O'Neill	46.4	94	Aug	—20	Feb	29.81
Ravenna	47.1	95	Aug	—16	Feb	35.95
Seward	51.0	96	Aug	—10	Feb	35.61
Syracuse	50.3	95	Aug	—10	Feb	31.34
Tecumseh	50.8	96	Aug	—14	Feb	42.03
Wallace	47.9	94	July	— 8	Feb	.....
Weeping Water	48.2	98	Aug	—12	Feb	39.83
Nevada.						
Austin	45.4	89	July	— 7	Dec	24.07
Battle Mountain	52.6	99	July	—10	Dec	10.79
Belmont	44.5	89	July	—11	Dec	12.74
Beowawe	49.8	99	Aug	—30	Dec	14.92
Browns	57.6	104	July	— 3	Dec	4.26
Carlin	43.7	102	July	—30	Dec	14.11

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
Nevada—Continued.	°	°		°		*Inches.*
Carson City	48.9	96	Aug....	— 4	Dec....	18.30
Downeyville	52.7	98	Aug....	2	Dec....	6.98
Elko	48.4	102	July....	—24	Dec....	14.63
Ely	39.5	96	Aug....	—19	Feb....	18.01
Fenelon	54.0	109	July....	— 2	Dec....	12.67
Golconda	51.5	104	July....	— 6	Jan....	10.02
Halleck	44.2	106	Aug....	.....	.....	14.91
Hawthorne (1)	54.8	95	July....	5	Dec....	8.35
Hawthorne (2)	53.1	98	Aug....	0	Dec....	7.36
Hot Springs	51.3	100	July....	—10	Dec....	4.40
Humboldt	50.1	95	July....	0	Jan....	7.62
Palisade	47.9	98	July....	—11	Dec....	14.81
Palmetto	45.8	92	July....	—12	Dec....	20.39
Reno	51.1	102	Aug....	2	Dec....	10.27
Tecoma	46.3	102	July....	—10	Nov....	12.98
Toano	47.5	98	July....	—12	Dec....	20.38
Wells	48.8	98	Aug....	—22	Feb....	7.77
Winnemucca	51.2	98	July....	— 7	Jan....	7.43
New Hampshire.						
Berlin Mills	41.4	90	June....	—27	Jan....	40.68
Concord	46.8	96	June....	— 9	Feb....	38.36
East Canterbury	45.0	95	June....	— 5	Feb....	40.22
Hanover (2)	45.2	96	June....	—19	Mar....	32.70
Littleton	42.7	89	June....	—17	Feb....	38.29
Manchester	47.9	95	June....	—10	Feb....	38.70
Nashua	48.3	98	June....	— 5	Feb....	39.17
North Conway	44.3	95	June....	—16	Feb....	45.87
Plymouth	42.6	96	Aug....	—13	Jan....	43.21
Stratford	45.6	94	June....	—22	Feb....	31.24
Walpole	45.0	92	June....	—12	Jan....	40.83
West Milan	41.7	90	June....	—28	Feb....	37.37
New Jersey.						
Asbury Park	53.3	92	June....	12	Mar....	51.64
Beverly	52.5	97	June....	10	Feb....	50.24
Bridgeton	56.0	93	Aug....	17	Mar....	55.25
Cape May C. H	54.3	90	Aug....	11	Mar....	49.68
Egg Harbor City	52.6	95	June....	11	Feb....	58.48
Franklinville	52.6	93	June....	10	Feb....	54.97
Freehold	52.2	96	June....	7	Nov....	50.90
Highland Park	52.6	98	June....	8	Mar....	43.77
Imlaystown	53.8	96	June....	12	Mar....	52.12
Lambertville	52.7	94	June....	12	Mar....	46.56
Moorestown	52.9	96	June....	12	Mar....	45.52
Newark	52.8	94	June....	10	Mar....	46.40
New Brunswick (1)	54.6	100	June....	6	Mar....	46.66
New Brunswick (2)	52.3	95	Aug....	10	Feb....	42.88
South Orange	51.2	94	June....	8	Mar....	54.14
Tenafly	52.2	102	June....	1	Feb....	41.63
Trenton	56.7	97	Aug....	10	Feb....	48.91
New Mexico.						
Albert	56.2	100	July....	3	Dec....	19.03
Antelope Springs	48.1	98	July....	—19	Jan....	11.12
Deming	63.7	105	July....	0	Dec....	4.55
Fort Bayard	53.7	98	Aug....	— 3	Dec....	10.30
Fort Wingate	49.0	96	July....	— 7	Dec....	14.27
Hillsborough	56.4	101	June....	3	Dec....	8.35
Lordsburg	61.7	108	July....	10	Dec....	5.66
Los Lunas	53.4	103	July....	— 8	Jan....	16.37
Monero	40.3	90	July....	—22	Feb....	25.11
Red Cañon	54.2	98	July....	8	Feb....	8.91
New York.						
Addison	47.8	95	June....	0	Mar....	25.84
Arcade	44.4	86	June....	— 9	Mar....	37.43
Baldwinsville	47.8	96	June....	0	Mar....	32.26
Binghamton	47.6	93	June....	— 4	Mar....	39.46
Boyds Corners	51.7	.....	.....	5	Mar....	48.29
Brookfield	44.6	91	June....	—15	Mar....	44.38
Canton	44.5	94	June....	—15	Jan....	35.50
Carmel	50.2	97	June....	1	Mar....	46.34
Central Park, New York City	53.8	98	Aug....	9	Mar....	39.55
Constableville	41.8	89	June....	—18	Feb....	53.84
Cooperstown	45.2	87	June....	—12	Mar....	41.07
Davids Island	51.8	96	Aug....	8	Mar....	34.92
Factoryville	48.0	96	June....	— 2	Mar....	36.40
Fleming	47.5	94	Aug....	0	Mar....	.....
Fort Columbus	53.2	97	June....	10	Mar....	42.32
Fort Hamilton	52.9	93	Aug....	5	Mar....	43.63
Fort Schuyler	51.5	92	Aug....	5	Jan....	39.76
Fort Wadsworth	54.2	96	Aug....	10	Mar....	48.28
Geneva	48.7	98	June....	2	Feb....	33.76
Hammondsport	48.0	90	June....	1	Mar....	.....
Hess Road Station	47.2	90	June....	2	Jan....	34.62
Honeymead Brook	47.9	92	June....	0	Mar....	38.94
Humphrey	46.9	92	June....	— 1	Mar....	45.08
Ithaca	49.3	92	June....	— 2	Mar....	38.05
Le Roy	47.1	93	June....	— 1	Mar....	49.57
Madison Barracks	46.0	92	Aug....	—11	Jan....	29.12
Malone	43.1	89	Aug....	—11	Feb....	42.98
Middletown	49.2	93	June....	4	Mar....	41.95
Minnewaska	45.1	95	June....	— 2	Mar....	57.32
Mount Morris	48.7	98	June....	1	Mar....	.....
New Lisbon	43.0	89	June....	—15	Mar....	39.77
North Hammond	46.0	.....	.....	—10	Jan....	36.66
Number Four	41.7	86	Aug....	—19	Feb....	46.52
Oxford	45.3	90	June....	— 8	Mar....	46.49
Palermo	46.6	96	Aug....	— 6	Mar....	31.87
Perry City	45.6	93	June....	— 9	Mar....	38.60
Plattsburgh	44.5	94	June....	—13	Jan....	26.05
Port Jervis	48.0	94	June....	1	Mar....	45.81
Poughkeepsie	49.1	99	June....	— 7	Jan....	37.95
Quaker Street	44.1	90	June....	— 6	Feb....	38.92

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit.					Precipitation—inches and hundredths.
	Mean for 1891.	Extremes for 1891.				
		Max.	Month.	Min.	Month.	
New York—Continued.	°	°		°		*Inches.*
Rondout	48.4	94	June....	0	Jan....	.....
Setauket	51.4	93	June....	12	Mar....	47.35
Sherman	45.1	.....	.....	— 3	Mar....	39.18
South Canisteo	45.2	92	June....	—10	Mar....	38.13
South Kortright	44.2	92	June....	—14	Mar....	.....
Utica	46.9	92	July....	— 3	Mar....	41.24
Watkins	49.6	93	July....	3	Mar....	.....
Wedgwood	45.8	96	June....	— 3	Mar....	32.75
White Plains	51.8	90	June....	7	Mar....	35.17
Willets Point	52.4	95	June....	9	Mar....	44.25
North Carolina.						
Asheville	54.9	89	June....	13	Nov....	53.23
Chapel Hill	59.8	99	June....	13	Nov....	58.19
Hendersonville	55.1	86	June....	14	Nov....	.....
Lenoir	55.7	90	June....	15	Nov....	57.60
Morganton	56.7	97	Aug....	12	Nov....	54.33
Mount Airy	55.3	98	Sept....	10	Nov....	52.89
Mount Pleasant	58.0	93	June....	16	Nov....	52.71
Oak Ridge	56.6	94	Aug....	16	Nov....	59.49
Smithfield	59.8	95	June....	17	Nov....	65.25
Weldon	58.5	96	June....	13	Dec....	59.58
Willeyton	58.4	96	June....	12	Dec....	59.00
North Dakota.						
Fort Buford	40.8	94	Aug....	—37	Feb....	18.93
Fort Pembina	36.4	93	May....	—29	Feb....	25.93
Fort Yates	43.5	103	Aug....	—30	Mar....	18.49
Gallatin	.....	98	Aug....	—32	Feb....	18.79
Napoleon	38.7	96	Aug....	—26	Feb....	27.90
Wahpeton	42.1	94	Aug....	—39	Feb....	22.50
Ohio.						
Akron	50.4	93	Aug....	5	Feb....	36.00
Ashland	51.0	95	Aug....	— 2	Mar....	36.28
Bangorville	49.8	101	Aug....	1	Feb....	40.78
Bement	48.0	98	Aug....	3	Mar....	38.68
Celina	52.6	94	Aug....	1	Feb....	33.00
Clarksville	52.2	93	Aug....	4	Feb....	42.65
Cleveland	50.5	92	Aug....	7	Feb....	34.87
Columbus Barracks	52.7	94	Aug....	1	Mar....	44.58
Dayton	53.9	95	Aug....	1	Feb....	38.85
Demos	51.4	91	Aug....	4	Mar....	41.72
Findlay	50.3	94	Aug....	— 1	Mar....	37.92
Garrettsville	47.1	92	Aug....	— 8	Mar....	37.94
Georgetown	54.4	97	Aug....	5	Feb....	46.85
Granville	50.3	92	June....	— 2	Feb....	42.81
Gratiot	51.9	90	Aug....	— 2	Mar....	40.70
Greenville	50.6	90	Aug....	— 1	Mar....	38.85
Hanging Rock	52.8	95	Aug....	11	Nov....	42.37
Hiram	48.7	91	Aug....	2	Feb....	34.84
Jacksonborough	53.6	98	Sept....	2	Feb....	35.95
Kenton	51.1	99	Aug....	— 1	Mar....	39.50
Logan	52.3	98	Aug....	1	Mar....	41.78
Lordstown	48.6	93	Aug....	— 5	Mar....	31.69
Marietta	54.3	92	Aug....	3	Mar....	40.76
McConnelsville	52.6	91	Aug....	5	Mar....	47.91
New Alexandria	52.2	92	Aug....	2	Mar....	40.70
New Comerstown	50.2	94	Aug....	0	Mar....	37.97
North Lewisburgh	52.3	96	Aug....	— 1	Mar....	44.25
Oberlin	49.4	96	Aug....	5	Feb....	34.95
Ohio State University	51.4	94	Aug....	— 2	Mar....	38.50
Orangeville	48.7	93	June....	— 6	Mar....	29.90
Pomeroy	55.4	94	Aug....	9	Feb....	31.64
Portsmouth	54.7	95	Aug....	10	Feb....	42.84
Upper Sandusky	51.4	93	Aug....	2	Feb....	31.73
Wauseon	49.2	100	Aug....	— 4	Mar....	37.11
Waverly	53.6	99	Aug....	7	Feb....	39.10
Westerville	51.1	91	Aug....	— 2	Mar....	39.86
Weymouth	49.6	98	Aug....	3	Feb....	33.50
Youngstown	51.3	93	Aug....	5	Mar....	30.25
Oklahoma.						
Fort Reno	58.8	100	Aug....	10	Feb....	26.77
Fort Sill	60.0	101	Aug....	12	Feb....	32.76
Guthrie	61.5	100	July....	10	Dec....	32.27
Oregon.						
Albany	47.1	103	July....	9	Mar....	49.15
Ashland	51.8	97	Aug....	16	Jan....	20.68
Corvallis	53.1	78	Aug....	27	Jan....	79.11
Eola	51.3	103	July....	13	Mar....	45.99
Forest Grove	50.6	98	July....	18	Mar....	49.64
Jacksonville	51.9	102	July....	20	Feb....	47.24
Joseph	52.3	98	July....	17	Dec....	27.92
La Grande	41.7	93	July....	—10	Feb....	26.68
Lakeview	48.6	96	July....	1	Dec....	21.54
McMinnville	46.7	102	Aug....	—11	Dec....	24.55
Mount Angel	51.5	102	July....	22	Jan....	51.46
Pendleton	53.3	101	July....	20	Jan....	53.32
Siskiyou	51.5	107	Aug....	— 7	Mar....	14.58
The Dalles	49.5	96	Aug....	16	Dec....	30.21
	52.2	100	July....	— 1	Mar....	12.12
Pennsylvania.						
Allegheny Arsenal	53.1	95	Aug....	5	Mar....	39.32
Altoona	54.9	95	June....	6	Dec....	37.86
Aqueduct	52.5	98	June....	8	Feb....	46.00
Blooming Grove	49.2	98	June....	— 3	Mar....	51.30
Blue Knob	47.0	96	June....	.....	.....	36.79
Carlisle	51.3	97	June....	9	Feb....	43.10
Coopersburgh	51.4	95	June....	8	Feb....	50.59
Corry	45.9	94	Aug....	—14	Mar....	42.47
Dyberry	45.3	94	Aug....	—14	Mar....	41.43
Easton	51.0	95	June....	6	Mar....	45.01
Emporium	51.0	92	June....	— 4	Mar....	48.47
Frankford Arsenal	54.3	97	June....	10	Feb....	42.82

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit. Mean for 1891.	Extremes for 1891. Max.	Month.	Min.	Month.	Precipitation—inches and hundredths.
Pennsylvania—Continued.	°	°		°		*Inches.*
Girardville	49·4	92	June....	7	Mar	62.16
Grampian Hills	47·6	91	Aug	— 2	Feb	52.02
Hollidaysburgh	50.4	98	June....	2	Mar	44.53
Honesdale	47·4	90	June....	— 7	Mar	38.57
Huntingdon	50·6	97	July	3	Jan	39.96
Kilmer	53·9	103	June....	12	Jan	52.05
Le Roy	48·1	98	June....	— 2	Mar	40.06
Ligonier	52·1	93	June....	4	Mar	50.24
McConnellsburgh	51·7	95	Aug	7	Mar	52.93
New Castle	53·0	95	Aug	— 2	Mar	35.42
Philadelphia	55·4	99	Aug	13	Mar	47.42
Phœnixville	53·1	94	June....	10	Feb	53.74
Pottstown	53·9	99	June....	10	Mar	54.09
Quakertown	50·6	.....	.....	2	Feb	53.21
Salem Corners	49·7	91	July	— 2	Mar	50.34
Somerset	47·8	94	Sept	— 3	Dec	50.13
South Eaton	48·7	92	June....	0	Mar	40.38
State College	49·2	92	Aug	0	Mar	45.81
Swarthmore	53·0	95	Aug	11	Mar	.....
Uniontown	53·6	91	June....	.....	.....	51.12
Wellsborough	44·9	92	June....	— 8	Mar	39.01
West Chester	53·0	93	Aug	10	Mar	64.00
Wysox	48·3	98	June....	2	Mar	32.21
York	52·2	96	June....	.....	.....	46.94
Rhode Island.						
Bristol	50·1	88	Aug	5	Mar	42.28
Fort Adams	48·8	95	Aug	5	Mar	30.52
Kingston (1)	49·4	94	June....	5	Mar	49.95
Kingston (2)	49·0	92	June....	1	Mar	50.24
Providence (2)	50·6	98	June....	2	Mar	52.81
Providence (3)	52·2	96	June....	4	Mar	55.98
South Carolina.						
Belmont	61·0	97	June....	20	Nov	59.83
Cheraw	61·3	100	June....	17	Dec	43.81
Port Royal	65·9	95	July	30	Feb	46.33
Statesburgh	61·8	95	June....	23	Nov	44.84
Yorkville	61·1	93	June....	20	Nov	63.90
South Dakota.						
Aberdeen	40·4	103	Aug	—26	Mar	15.96
Brookings	41·6	100	Aug	—29	Nov	16.35
Clark	43·1	102	May	—23	Nov	.....
Elkton	.....	98	Aug	—28	Nov	18.78
Flandreau	42·9	100	Aug	—29	Nov	20.72
Fort Meade	46·4	100	Aug	—33	Feb	21.79
Fort Randall	46·8	95	Aug	—20	Mar	22.95
Fort Sully	46·1	109	Aug	—24	Mar	13.34
Kimball	43·5	103	Aug	—18	Feb	24.24
Oelrichs	44·6	104	Aug	—28	Mar	22.05
Onida	40·5	102	Aug	—20	Feb	.....
Parkston	45·4	98	Aug	—16	Feb	23.48
Spearfish	45·9	96	Aug	—28	Feb	26.32
Wolsey	43·6	102	Aug	—25	Feb	18.47
Tennessee.						
Andersonville	57·5	95	Aug	16	Nov	47.03
Ashwood	58·8	95	June....	18	Nov	55.54
Austin	59·7	96	June....	15	Nov	52.96
Clarksville	58·3	95	June....	14	Nov	59.16
Covington	59·7	93	June....	18	Nov	54.08
Fayetteville	59·4	96	June....	20	Feb	55.63
Florence Station	59·2	93	June....	19	Nov	48.88
Franklin	58·0	95	June....	15	Nov	52.58
Greeneville	55·8	86	June....	16	Nov	47.36
Jacksboro	56·3	90	Aug	15	Nov	53.17
Lynnville	58·0	98	June....	14	Nov	58.89
Nunnelly	58·7	92	June....	13	Nov	53.09
Riddleton	58·0	96	Aug	12	Nov	57.83
Rogersville	55·2	91	June....	16	Nov	49.33
Rugby	54·8	91	June....	12	Feb	49.64
Sharp	59·5	98	June....	14	Feb	63.84
Texas.						
Brady	63·2	102	July	18	Feb	27.97
Brazoria	67·2	95	June....	26	Dec	56.93
Brenham	69·4	101	Aug	26	Feb	39.26
Brownwood	62·4	105	July	16	Feb	23.83
Burnet	64·3	95	July	.....	.....	32.62
Camp Eagle Pass	69·3	111	July	18	Dec	18.97
Camp Peña Colorado	59·7	104	June....	1	Dec	12.37
College Station	68·7	100	Aug	25	Jan	42.28
Columbia	68·4	97	June....	26	Dec	42.42
Corsicana	63·6	100	July	19	Feb	29.60
Duval	68·4	104	July	26	Feb	32.65
Fort Bliss	62·9	107	July	9	Dec	3.34
Fort Hancock	59·6	109	July	— 6	Dec	3.33
Fort McIntosh	71·2	106	July	27	Dec	20.51
Fredericksburgh	64·1	101	July	14	Dec	29.18
Gallinas	66·8	105	July	18	Dec	37.06
Grape Vine	63·5	104	Aug	16	Nov	24.74
Houston	66·9	99	June....	25	Jan	46.44
Huntsville	66·4	98	June....	25	Feb	58.22

Annual summary for 1891—*Voluntary stations*—Continued.

State and station.	Temperature—degrees Fahrenheit. Mean for 1891.	Extremes for 1891. Max.	Month.	Min.	Month.	Precipitation—inches and hundredths.
Texas—Continued.	°	°		°		*Inches.*
Mesquite	64·9	103	Aug	19	Feb	28.34
Mountain Springs	62·8	105	Aug	15	Nov	30.63
New Braunfels	67·0	100	July	20	Dec	34.81
New Ulm	67·8	98	July	27	Feb	33.63
Round Rock	67·3	101	Aug	20	Dec	38.54
San Antonio	68·1	104	July	25	Jan	29.24
Silver Falls	60·7	103	July	11	Mar	19.69
Venus	64·2	102	Aug	13	Nov	28.61
Waco	66·3	100	July	21	Dec	30.80
Utah.						
Beaver	47·9	94	July	—12	Dec	10.10
Blue Creek	51·3	105	July	— 6	Feb	8.65
Corinne	50·7	101	Aug	—12	Feb	17.79
Fort Douglas	50·8	98	July	2	Dec	15.26
Kelton	50·2	103	July	—15	Feb	14.48
Lake Park	50·4	95	July	— 7	Dec	24.52
Losee	45·6	99	July	— 7	Dec	13.05
Moab	53·2	108	July	2	Dec	7.15
Mount Carmel	.....	97	July	— 7	Dec	16.22
Nephi	46·0	98	July	—19	Feb	16.52
Ogden	50·7	98	July	— 4	Dec	23.11
Parowan	48·1	99	July	—10	Feb	14.24
Promontory	48·2	103	July	— 5	Feb	14.27
Snowville	52·5	93	July	4	Dec	15.11
Terrace	51·8	100	July	0	Jan	6.33
Vermont.						
Brattleboro	47·7	96	June....	— 8	Feb	46.89
Burlington	47·7	94	June....	— 4	Jan	29.12
Chelsea	40·2	81	June....	—17	Feb	37.46
Jacksonville	43·2	90	June....	—18	Mar	53.68
Lunenburgh	45·7	95	June....	—15	Feb	29.97
Strafford	45·2	88	June....	—14	Feb	38.22
Vernon	46·8	95	June....	—10	Feb	39.14
Weathersfield	44·6	88	June....	—12	Feb	.....
Virginia.						
Birdsnest	58·4	93	Aug	19	Dec	62.45
Dale Enterprise	54·5	93	Aug	5	Jan	40.49
Fort Myer	54·9	96	Aug	11	Dec	54.36
Lexington	54·6	94	June....	3	Nov	42.41
Marion	53·2	90	June....	11	Jan	39.15
Petersburgh	57·5	95	June....	11	Dec	47.42
Richmond	60·8	103	June	7	Dec	52.83
Stanardsville	.....	94	June....	14	Dec	44.67
Staunton	53·6	94	June....	4	Nov	42.24
Washington.						
Blakely Port	51·3	90	July	21	Mar	38.15
Chehalis	51·4	101	July	20	Mar	44.48
Doe Bay	49·6	85	July	13	Nov	37.29
East Sound	51·0	91	July	20	Feb	35.63
Fort Simcoe	55·3	103	July	8	Mar	13.56
Fort Spokane	49·0	104	July	— 9	Mar	12.34
Fort Townsend	49·0	89	July	20	Mar	24.90
Fort Walla Walla	53·2	109	July	— 2	Mar	13.95
Tacoma	52·4	99	July	23	Feb	50.92
Vancouver Barracks	52·9	103	July	19	Mar	44.40
Waterville	44·9	102	July	— 7	Mar	11.81
West Virginia.						
Ella	51·8	88	June....	6	Mar	47.35
Pleasant Hill	50·1	90	June....	— 9	Mar	.....
Tannery	52·0	94	June....	— 2	Mar	.....
Wisconsin.						
Amherst	43·8	98	Aug	—21	Feb	25.68
Beloit	47·0	95	Aug	—11	Feb	30.78
Columbus	45·7	100	Aug	—14	Feb	22.45
Embarrass	44·7	95	Aug	—26	Feb	41.29
Fond du Lac	45·2	98	Aug	—23	Feb	21.40
Hayward	39·9	94	Aug	—37	Feb	34.45
Hillsborough	44·2	96	Aug	—22	Feb	25.31
Honey Creek	47·1	96	Aug	—12	Feb	30.34
Madison	46·0	92	Aug	—14	Feb	24.38
Manitowoc	46·6	99	Aug	—20	Feb	24.58
Medford	41·6	97	Aug	—32	Feb	28.34
Menomonie	43·8	100	Aug	—25	Feb	35.32
Oconto	44·9	97	Aug	—17	Feb	25.58
Oshkosh	45·9	98	Aug	—18	Feb	22.96
Peshtigo	43·0	94	Aug	—28	Feb	32.21
Plover	42·1	99	Aug	—34	Feb	26.47
Prairie du Chien	48·8	98	Aug	—15	Feb	22.42
Rhinelander	40·3	95	Aug	—40	Feb	27.83
Wyoming.						
Camp Pilot Butte	41·6	96	July	—20	Dec	13.23
Fort D. A. Russell	41·4	90	Aug	—16	Mar	15.11
Fort Fetterman	45·8	105	Aug	—25	Feb	11.40
Fort McKinney	45·3	91	Aug	—23	Feb	13.03
Fort Washakie	.....	90	July	—29	Feb	18.86
Fort Yellowstone	39·2	89	Aug	—24	Dec	23.34
Lusk	42·9	94	July	—19	Feb	.....
Wheatland	42·6	96	Aug	—20	Feb	.....

Letters of the alphabet indicate number of days missing from the month's record; thus, *e* indicates five days missing.

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Form 106 F.

CHART I. ISOBARS AND WIND DIRECTIONS.

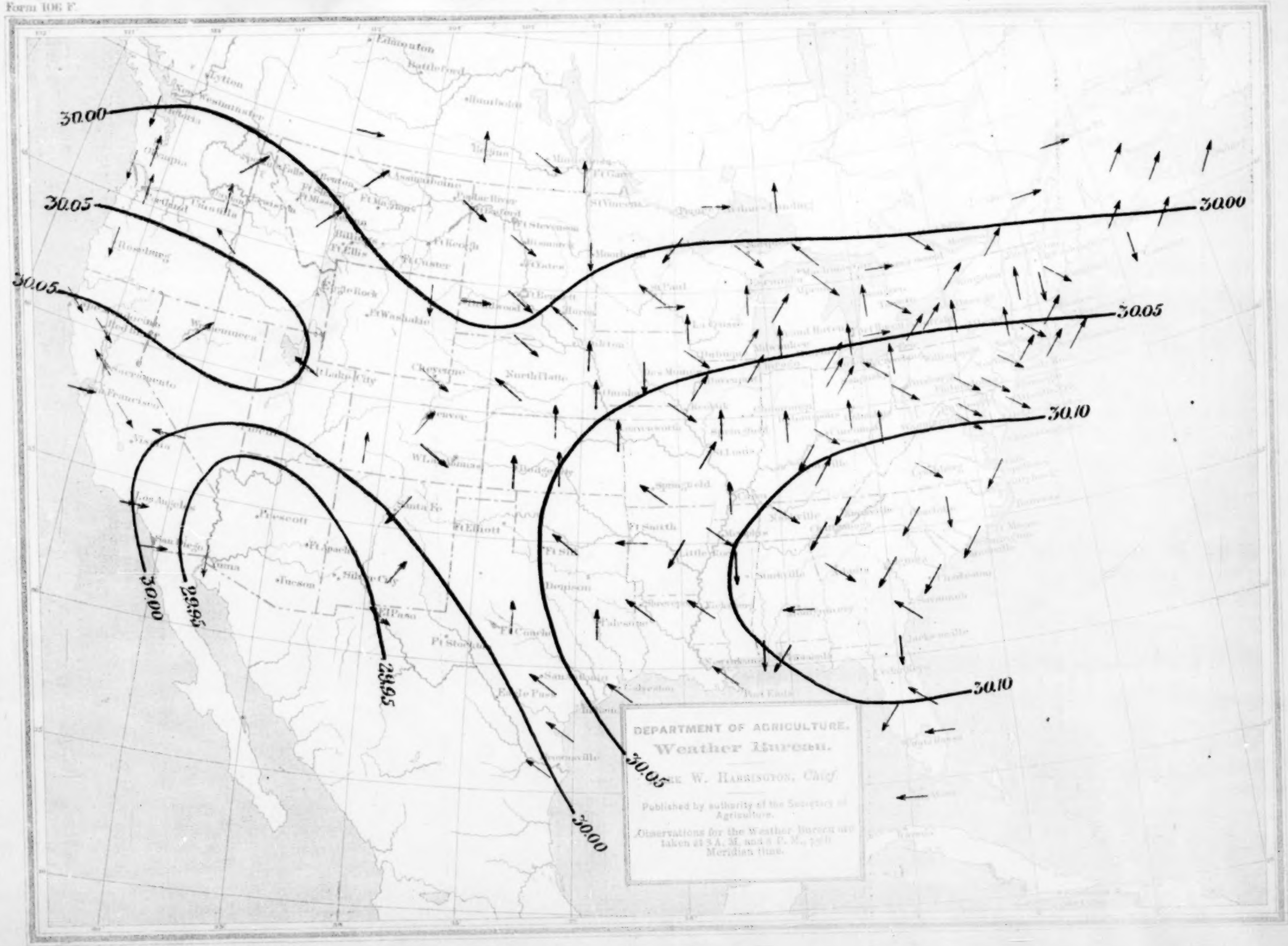

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Chart II. Annual Mean Temperature, 1891, and departures from the Normal.

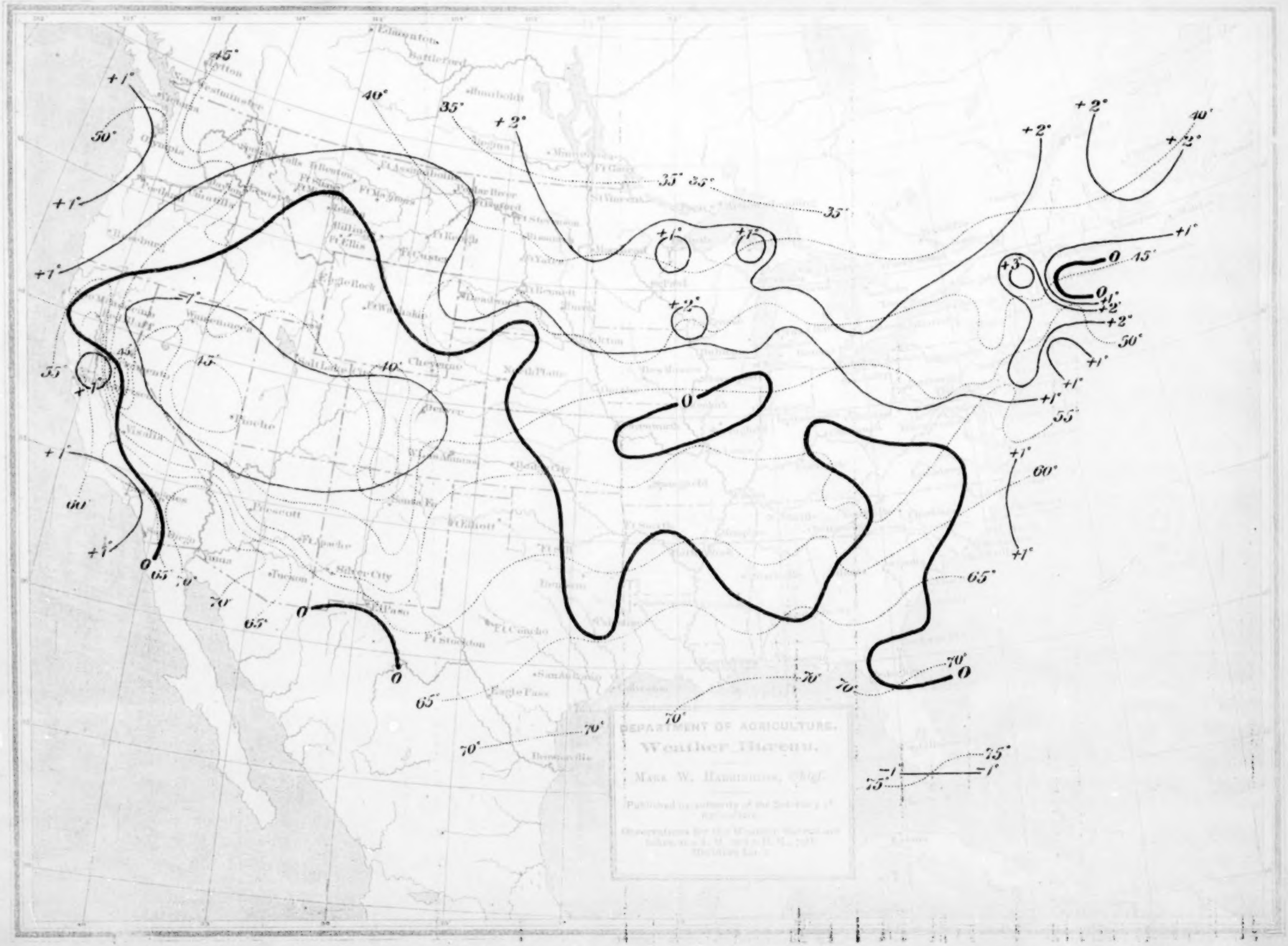
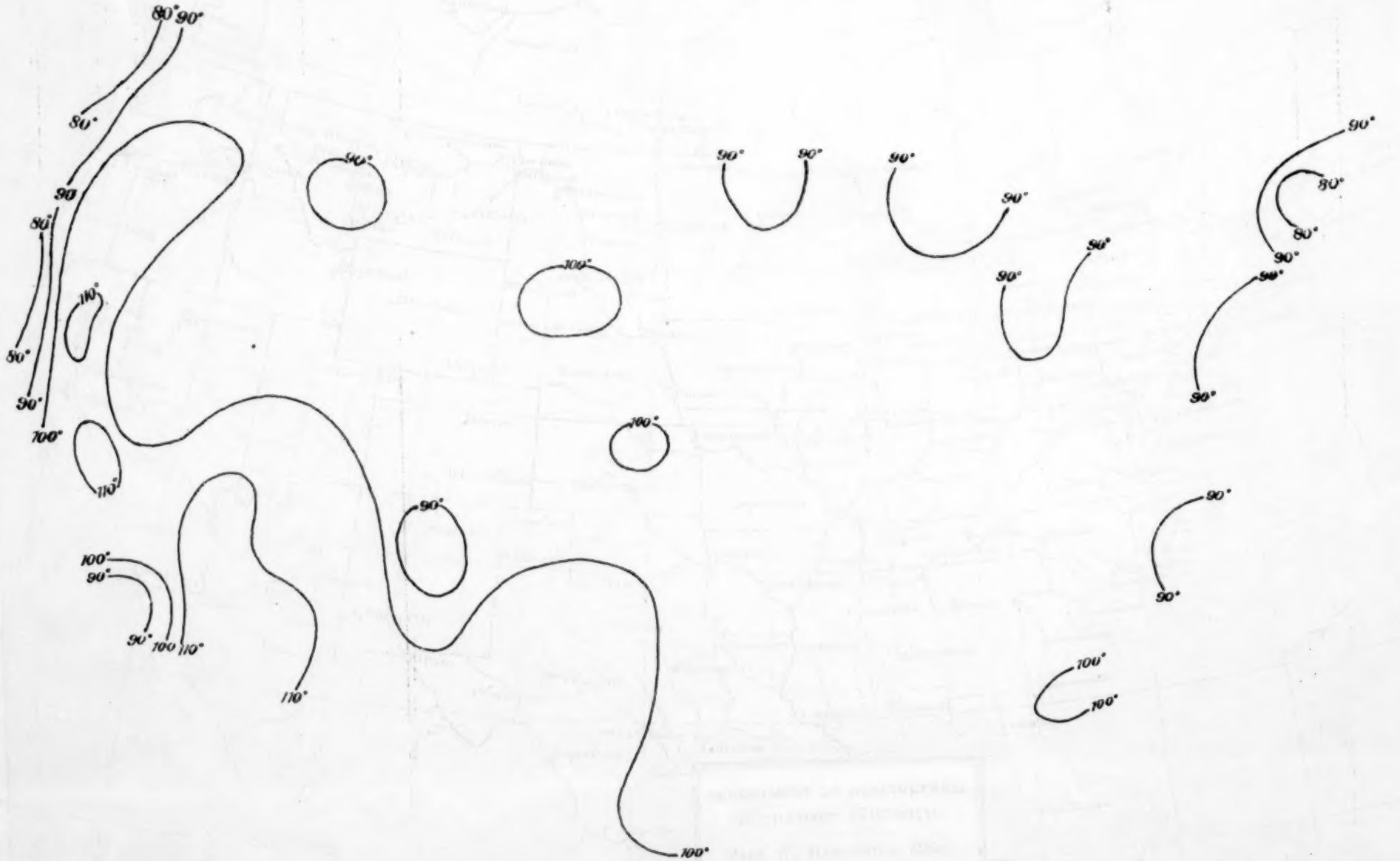
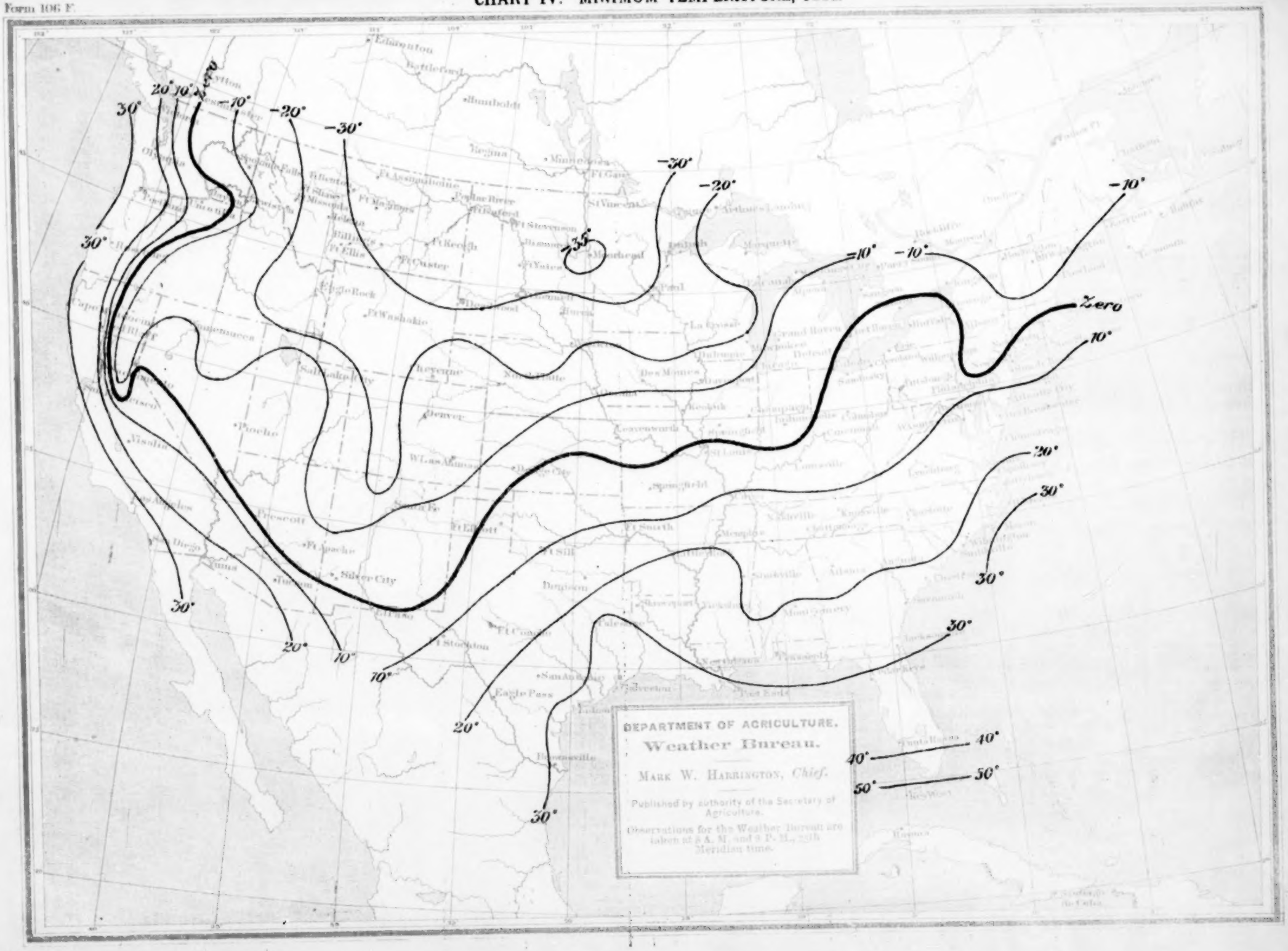


CHART III. MAXIMUM TEMPERATURE, 1891.



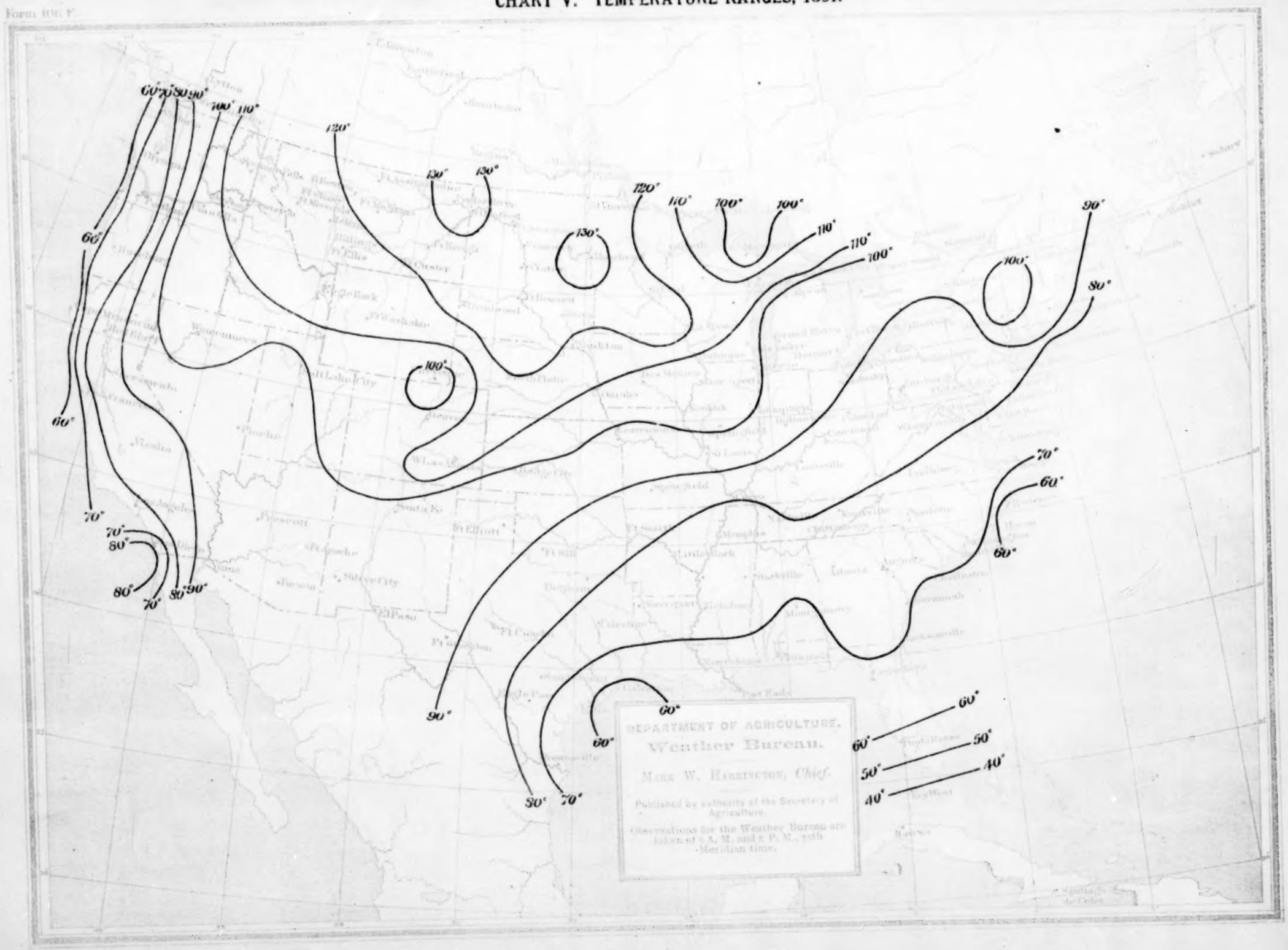
Form 106 F.

CHART IV. MINIMUM TEMPERATURE, 1891.


30°
20°
10°
Zero
-10°
-20°
-30°
-35°
40°
50°
Ellsworth
Bottineau
Huntsboldt
Regina
Minnedosa
Ft Assiniboine
Ft Custer
Ft Washakie
Denver
Pueblo
Las Animas
Dodge City
Springfield
Prescott
Ft Apache
Silver City
Tucson
Ft Stockton
Eagle Pass
San Antonio
Galveston
Brownsville
Memphis
Ft Smith
Ft Sill
Ft Elliott
Ft Reno
Ft Sheridan
Ft Yates
Ft Meade
Ft Maginnis
Ft Missoula
Ft Shaw
Ft Ellis
Ft Buford
Ft Stevenson
Ft Keogh
Ft Custer
Ft Washakie
Yellowstone Park
Glacier
Helena
Butte
Boise
Winnemucca
Salt Lake City
Ogden
Grand Junction
Thermopolis
Rawlins
Cheyenne
Ft Sidney
Ft Robinson
Ft Niobrara
Ft Omaha
Ft Leavenworth
Ft Riley
Ft Reno
Ft Supply
Ft Arbuckle
Ft Sill
Ft Smith
Ft Gibson
Ft Scott
Ft Leavenworth
Ft Omaha
Ft Niobrara
Ft Robinson
Ft Sidney
Ft Keogh
Ft Yates
Ft Meade
Ft Sheridan
Ft Buford
Ft Stevenson
Ft Maginnis
Ft Shaw
Ft Missoula
Ft Ellis
Ft Custer
Ft Washakie

Form 1001 F

CHART V. TEMPERATURE RANGES, 1891.



Form 106 F.

Chart VI. Annual Precipitation, 1891.

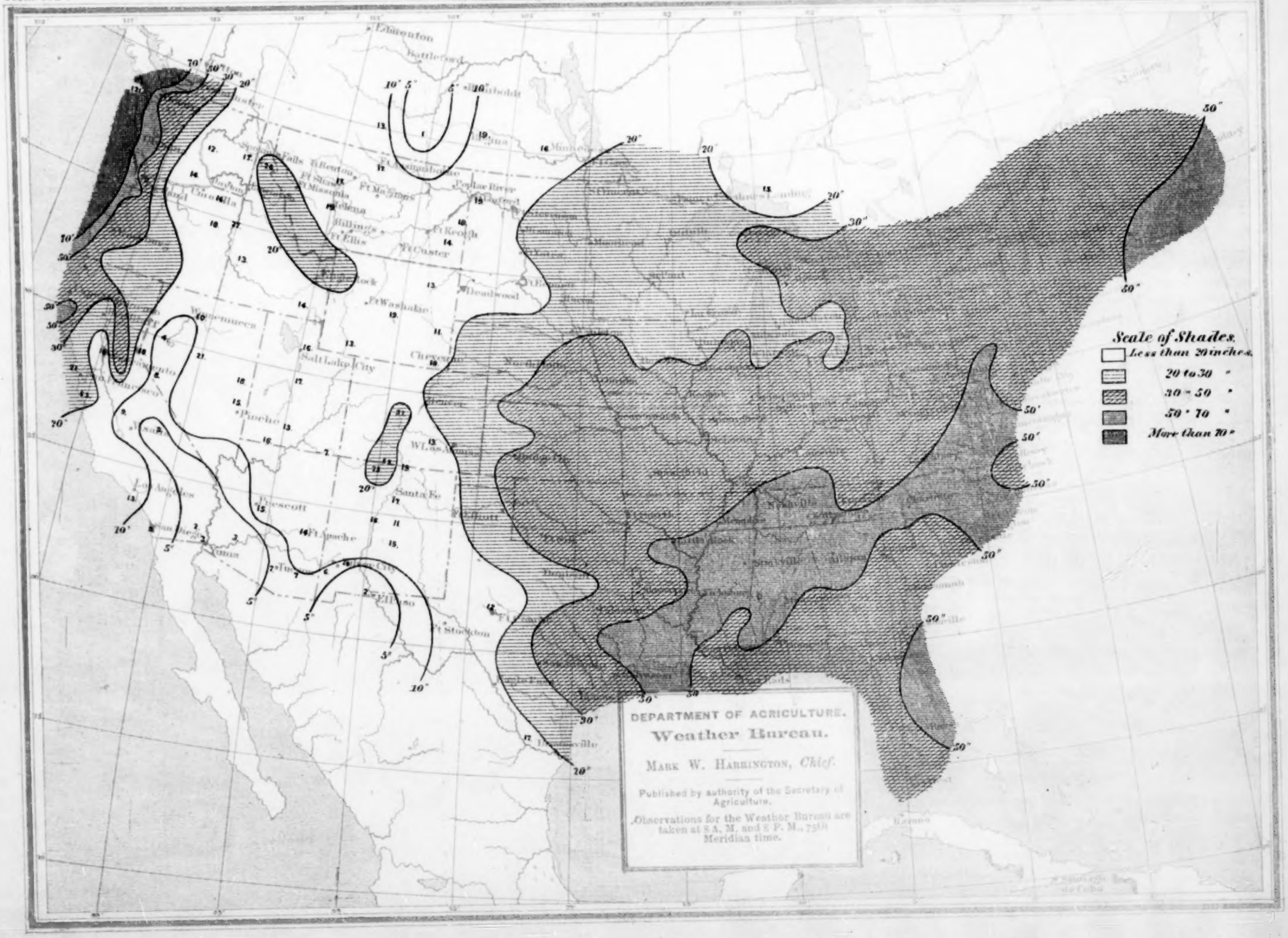
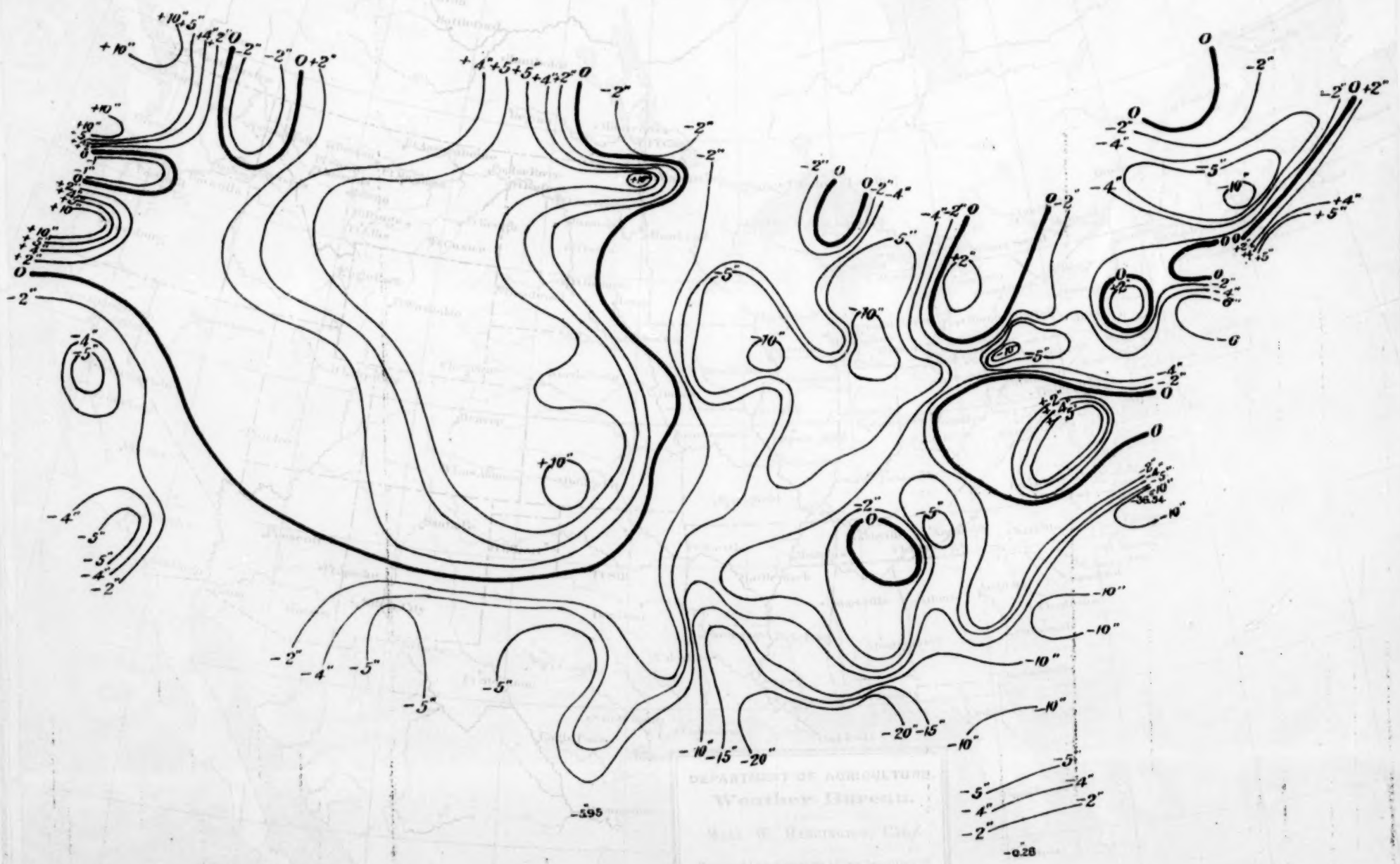

Scale of Shades.
Less than 20 inches.
20 to 30 "
30 " 50 "
50 " 70 "
More than 70"
DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.

CHART VII. DEPARTURES FROM NORMAL PRECIPITATION, 1891.



UNITED STATES OF AMERICA:
DEPARTMENT OF AGRICULTURE.

ANNUAL SUMMARY FOR 1891.

SUPPLEMENT TO

MONTHLY WEATHER REVIEW

FOR DECEMBER, 1891.

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MARK W. HARRINGTON,

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